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Religious Beliefs about Suffering: Measure Validation and Relationships with Well-Being

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Beliefs form a core dimension of all world religions, but there is limited data on the relationships between specific religious beliefs and well-being. This dissertation presents findings from two studies of beliefs about suffering using the Views of Suffering Scale (VOSS; Hale-Smith, Park, & Edmondson, 2012). Study 1 was a cross-sectional validation study using an online sample of 1000 participants recruited via Amazon Mechanical Turk. Participants self-identified as Catholic, Protestant, Atheist/Agnostic, Hindu, Muslim, or Jewish. Measures included information regarding demographics and measures of religious history and beliefs.

Findings from Study 1 indicated differences in beliefs based on age, geographic region, religious affiliation, and how religious or spiritual participants were. The data replicated previous findings, indicating that the VOSS is a valid measure of beliefs across religious contexts in the United States. Additionally, the data suggested that although broad religious groupings into the major world religions may have some utility, assumptions about a person's beliefs based on their denomination may be erroneous.

Study 2 was a longitudinal study of beliefs, physical and mental well-being. Participants were 300 senior citizens who completed two surveys three months apart. Measures included demographics, religious beliefs about suffering, physical and mental health, attitudes toward God, stressful life events, the most stressful event experienced between Time 1 and Time 2, coping strategies, and perceptions of stress-related growth. This study explored relationships between

beliefs and well-being cross-sectionally and longitudinally using a mixture of correlations, regression, and structural equation modeling.

Results indicated that many beliefs are related to well-being, sometimes directly and other times mediated by optimism and negative attitudes towards God. Most significant relationships predicted poorer well-being on psychological rather than physical measures of health, with a few exceptions. Beliefs were also related to coping strategies and perceptions of growth in several ways. These studies represent some of the first psychological research conducted on religious beliefs about suffering and indicate that this is a rich area for further study.

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Introduction

Humans have struggled to understand to suffering in many ways over the centuries. Defined here as a person's subjective experience of distress in response to a stressor, suffering is a universal human experience (Kahn & Steeves, 1986). It can be acute or chronic and can vary in intensity. For some, suffering comes in the experience of loss and subsequent grief. Others suffer because of individual cruelty or natural disasters, because of chronic pain, mental illness, or experiences of prejudice. Suffering affects children when they are bullied, workers when they are injured, and elderly people when they lose their ability to function independently. Stressors vary, but the experience of suffering is universal.

Philosophers, writers, historians, scientists, and other scholars have grappled with how to understand, respond to, and avoid suffering (Chapman & Gavrin, 1993). Psychologists joined in this quest from the very beginning, and today a great deal of psychological research is connected in some way to the quest to alleviate or prevent suffering. The questions are wide-ranging, incorporating both individuals (e.g., Why do some people become depressed?) and entire groups (e.g., How can we reduce the impact of stigma?). Every branch of psychology focuses on suffering in some way, whether through understanding how it is caused (e.g., the neurochemistry of schizophrenia), trying to change a behavior that causes suffering (e.g. bullying in elementary schools), or reducing the probability of suffering (e.g., improving workplace environments).

In keeping with this tradition, this project explores human experiences of suffering from the perspectives of cognitive theory and the psychology of religion, aiming to better understand how people view suffering and how this understanding is related to individuals' appraisals of stressors and coping strategies, life experiences, and well-being. In these studies, we focus on

what people think about suffering, how those thoughts may be associated with religious beliefs, and how those cognitions may relate to well-being.

The Importance of Cognitions

Since the 1960's, psychologists have been studying how people's thoughts impact their behaviors and well-being. According to the transactional model of stress and coping (Folkman & Lazarus, 1980), people's attempts to deal with stress (i.e., coping) are based on their perceptions of both an event/potential stressor and of their resources. When people experience an event, their primary appraisal results from evaluating the event's significance and valence as threat, loss, or challenge. Their secondary appraisal involves evaluating their potential internal and external coping resources; based on this information, people then choose a coping strategy.

In this model, the specific ways in which people appraise stressors and the resources available to them are critical components of how overwhelmed they feel in response to their stressful event. For example, if someone interprets an event as challenging rather than harmful, then that person will feel less stressed. If an employee perceives feedback from her supervisor as an important tool for professional growth rather than as a sign of personal failure, she will be less distressed at receiving negative feedback. Similarly, if a therapist perceives conflict with a client as an opportunity to model healthy conflict-resolution skills, he is likely to experience much less distress at the therapeutic rupture than he might if he saw it as threatening to his competence.

In terms of coping strategies, awareness of potential resources is essential (e.g. coping abilities, social support, previous experience) because if someone does not think that he or she has a resource available then he or she will not attempt to use it. For example, if a woman is experiencing violence in a relationship, she could assess the situation as extremely stressful, but without knowledge of local non-profit organizational resources, she may not pursue legal

recourse. Similarly, if an international student is struggling to write papers in a foreign language and does not know that the university provides proof-reading for international students, then he will not attempt to use those services even though they could be an excellent coping strategy.

According to the transactional stress-coping model, perceptions of a stressor and potential resources are both critical ingredients in determining an individual's overall stress response (Aldwin, 2007). If someone perceives an event as potentially challenging but determines that he or she has adequate resources available to cope, his or her distress level could be quite low. By the same token, someone can appraise a relatively innocuous situation as stressful, be convinced that he or she does not have the resources necessary to address it, and feel overwhelmed. The person's thoughts are a major component in predicting how he or she will respond to any given situation. They explain why some individuals are stressed by relatively small problems while others manage extraordinarily large ones with grace and relative ease.

Importantly, a thought's accuracy does not determine its level of influence. Cognitive therapy, Cognitive-Behavioral Therapy, Acceptance and Commitment Therapy, and other treatment modalities all incorporate the assumption that what people think about things and the language that they use will influence how they experience them (Dattilio & Freeman, 1992; Hayes & Strosahl, 2004). The reality is that people *have* the thoughts, and those thoughts influence their well-being.

Where Do Thoughts Come From?

As we consider how individuals' thoughts influence their well-being in response to stressors, one obvious question regards where those thoughts come from. How do people decide what meaning to attach to circumstances (i.e., how to interpret stressors), and which of their coping strategies is available and most likely to be useful? These are complex questions, and to

find some answers we must turn to the constructs of worldview and schema.

Worldviews are "a set of assumptions about physical and social reality that may have powerful effects on cognition and behavior," shaping people's interpretations of and interactions with the world around them (Koltko-Rivera, 2004, p. 3). People's worldviews inform their beliefs about existential issues, their evaluations of things as morally good or bad, and whether they identify things as positive or negative (Koltko-Rivera, 2004; Rokeach, 1973). Worldviews provide the framework to organize beliefs about our identities and the world around us (Schlitz, Vieten, & Miller, 2010).

Although sometimes equated with worldviews (e.g., (Janoff-Bulman, 1989; Liu, 2002), schemas are typically defined as being more specific and circumscribed, "a cognitive structure or mental representation containing organized, prior knowledge about a particular domain, including a specification of the relations among its attributes (McIntosh, 1995, p. 2). The individual depends on his or her schema or worldview to form perceptions and assessments of each situation, and it is these perceptions that influence how people cope with stressors, thereby influencing their experiences of suffering.

Cognitions, then, are a product of worldviews and schemas, but where do those come from? There are many contributors to worldviews and schemas including genetic tendencies, religion, culture, geographic region, and individual experiences (Schlitz et al., 2010) but one view of the sources of worldviews and schemas that holds the most promise for psychological researchers is religion. Sometimes described as a cognitive schema itself (e.g., McIntosh, 1995) and other times more generally as a contributor to worldviews (e.g., Carone, 2001), religion is integral in helping a person interpret and evaluate information and experiences.

Religion is powerful both because one of its main functions is to provide people with a

sense of meaning (e.g., Berger, 1967; also see Park, Edmondson, & Hale-Smith, 2013 for a more thorough discussion) and because it is more generally an important part an individual's culture (Baumeister, 1991). Worldwide, the percentage of people in each country who report that religion is important to them varies, but the numbers are staggering: only three countries polled worldwide had less than 20% of people who identified religion as important, while 32 countries had 95% or more (Crabtree, 2010). Within the United States, 65% of Americans report that religion is "moderately" to "very" important to them (Crabtree, 2010).

Religion comprises many different dimensions and there is no clear agreement on what the central dimensions of religion are. However, religious beliefs (i.e., what people think because of or in relation to their religions) are one of the few dimensions that virtually every scholar agrees is part of the larger religion construct (Hall, Meador, & Koenig, 2008; Idler, Musick, Ellison, & George, 2003). Religious beliefs may be thoughts about religion itself (e.g., "There is a personal God"), or can be cognitions that a person has that are shaped by religion. For example, beliefs might be expressed as moral judgments (e.g., "It is wrong to kill"), values (e.g., "The most important thing in life is being a loving person"), attributions (e.g., "There is a drought because a higher power is withholding rain"), interpretations of events (e.g., "I got a promotion at work so God must be happy with me"), or any other thought influenced by religion.

Although religious beliefs are often conceptualized as accessible, easily-articulated cognitions, in reality they may operate consciously or unconsciously. In their seminal work on the science of religious beliefs, Barrett and Lanman (2008) note that beliefs may be either reflective (i.e., conscious and easily articulated) or non-reflective (beliefs that influence information processing, speech and action but of which we are not necessarily aware). Beliefs may be adopted after a deliberate thought process or may be shaped as a result of enculturation

(Barrett & Lanman, 2008). Given psychology's interest in cognitions and schemas, and the way that religion functions to provide meaning within worldviews and schemas, it seems natural that psychologists would be interested in research on religious beliefs (e.g., Carone, 2001; Newton & Mcintosh, 2010).

Religion's influence on psychological process also extends beyond cognitions to issues of coping and meaning. Scholars note that religious beliefs may impact psychopathology (e.g., Patrick & Kinney, 2003) and factors related to individuals' well-being (e.g., coping,Pargament et al., 1990)). Studies show that religion is especially important to individuals who are in stressful situations and those requiring clinical interventions (e.g., Graham, Furr, Flowers, & Burke, 2001; Koenig, George, & Peterson, 1998; Tix & Frazier, 1998). Religion provides meaning for individuals and entire communities (Berger, 1967) and may serve as a source of comfort (Musick, 2000).

Religious Responses to Suffering

Suffering as a general topic is addressed by all religions but with tremendous variation. Sometimes suffering is seen as a sign that an individual or entire people group is being punished by a higher power (e.g., Brown, 2005), other times as a natural (if unfortunate) part of the world, but not a reflection of divine concern or power (e.g., Lewis, 1944; Whitney, 1985). Others see suffering as karma, the just results of one's past actions in the present (e.g., Whitman, 2007). Sometimes suffering is viewed as an invitation to become more like a God who suffered out of love for the world (e.g., Moltmann, 1993). For others, suffering is something to be mindful of as it happens (e.g., Hanh & Hanh, 1998), but not necessarily to be changed. For yet another group of people, their a-religious beliefs inform them that suffering is a random occurrence that has nothing to do with the divine (Dawkins, 1995). Within Christianity, there is an entire field of

theological study known as "theodicies," attempts to explain the presence of suffering while maintaining orthodox doctrines on the goodness and power of God (Brown, 1999).

Not only do religions provide reasons why suffering takes place, but they also provide answers regarding what people should do about it. According to various religious perspectives, when faced with difficult situations, people should sacrifice animals, fast, pray, search their lives for the cause, attempt to do good in order to avoid more suffering, or simply notice the experience of suffering rather than attempt to control or avoid it. Many books have been written, lectures given, and sermons preached on how the devout should manage experiences of pain.

Given the importance of cognitions in how humans respond to stress, the centrality of religious beliefs for much of the world's population, and fact that religions address human suffering at length, it is no surprise that several researchers over the last twenty years have called for research on religious beliefs about suffering (Furnham & Brown, 1992; Hall & Johnson, 2001). In spite of these calls for research, only a few studies have been conducted (e.g., Gray & Wegner, 2010; Musick, 2000; Watson, 1987).

This lack of research on beliefs about suffering, while somewhat perplexing, is not a complete surprise. The psychology of religion is generally less-researched by psychologists than might be expected considering its presence in every culture and importance worldwide. To make a comparison of another subject, consider research on depression. The World Health Organization identified depression as the most significant cause of lost years due to a disability (Bromet et al., 2011). One might expect psychologists to attend more to depression than religion because of its obvious impact on quality of life and productivity, but even after considering this, the imbalance in research production is remarkable. In contrast to religion where the *minimum* percentage of people who said it was important to them was 16% (in Estonia; Crabtree, 2010),

the number of people who claimed to experience depression reached a *maximum* of 21% (France; Bromet et al., 2011); there are several countries worldwide where more than 90% of the population reported that religion was important to them (Crabtree, 2010). In spite of this, there are more than seven times the number of articles published on depression than there are on religion (77,209 vs. 10,592) in PsycInfo alone.

This example is provided not to suggest that there should be less research on depression, but to illustrate the reality that religion has received less attention from the psychological research community than would be expected from such an important aspect of the world's population. There are several factors that may have held researchers back up until now including a lack of knowledge regarding religion's importance, general prejudice against religion itself, and methodological barriers to studying beliefs (Park & Paloutzian, 2013).

Why the Lack of Research on Beliefs about Suffering?

In terms of lack of knowledge, the lack of research on religious cognitions about suffering may be that psychologists are simply ignorant of the value that the general population places on religion or the rich tradition of scholarship in this area by religious studies scholars and theologians. Certainly, psychologists in the United States tend to be much less religious than other members of the population (Bergin & Jensen, 1990; Shafranske & Malony, 1990), and because research topics are often chosen by personal interest, it makes sense that there would be less research on religion than other topics. Additionally, the incorrect use of religious terms (e.g. theodicy; Daugherty, West, Williams, & Brockman, 2009) suggests that psychology researchers are not always as well-versed in religious scholarship today in the same way that they are acquainted with the medical literature after decades of collaborating with biologists and physicians.

Another possible reason for the lack of research on religious beliefs about suffering is a broader prejudice of psychologists against religion. Early psychologists were more concerned with dismissing religion than evaluating it as a potential area of study (e.g., Ellis, 1980; Freud, 1928/1964), and only in the last 30 years have scholars engaged in extensive research on religion's impact on individual (Ai, Hall, Pargament, & Tice, 2012; Hackney & Sanders, 2003; Plante & Sherman 2001), social (e.g., Graham & Haidt, 2010; Heaton, 2013), neuro- (e.g., Kapogiannis et al., 2009; Schjoedt, Stodkilde-Jorgensen, Geertz, & Roepstorff, 2009), and developmental psychology (Bering, 2006; Heiphetz, Spelke, Harris, & Banaji, 2012). To date, the majority of research has been conducted in North America, but increasing numbers of studies are being published involving participants from other racial, ethnic, religious, and cultural backgrounds (e.g., Al-Azri, Al-Awisi, & Al-Rasbi, 2013; Gigi, Papirovitz, & Hagit, 2007; Loewenthal, Cinnirella, Evdoka, & Murphy, 2001; Obligacion, 1999). Based on the dramatic increase in research on religious topics (particularly religion and health) in the last decade, it appears that researchers are now less limited by the prejudice that characterized early psychology, but a tremendous amount of work remains to be done to make up for the field's early silence on this topic.

A third reason for the lack of research on religious beliefs about suffering may have been a lack of measurement tools. Until recently, there were no measures to assess religious beliefs about suffering: only with the introduction of the Views of Suffering Scale (VOSS; Hale-Smith et al., 2012) was a psychometrically-sound, validated measure of individuals' beliefs about suffering available. Importantly, unlike previous attempts to measure views of suffering (e.g. Musick, 2000), the VOSS moves beyond Christian theodicies and incorporates viewpoints

relevant to people from a variety of religious and non-religious traditions (i.e., Christians, Muslims, Hindus, Jews, Buddhists, Atheists/Agnostics).

Designed for a North American population but flexible enough to be adapted for other contexts, the VOSS incorporates some of the most common North American religious and spiritual beliefs about suffering, including beliefs about God's role and presence, randomness, retribution (i.e., karma), and unorthodox theistic beliefs (Table 1). Religious perspectives were included based on the most common religious orientations in the United States (Pew Forum, 2008). The VOSS' psychometrics were examined in a sample of more than 600 undergraduate students and the results suggested that it has strong reliability (i.e., internal consistency and test-retest reliability had good α's and r's $\geq .70$) and validity (e.g., comparisons to measures of related constructs suggest that the VOSS scores demonstrate good convergent validity).

Overview of the Present Studies

This dissertation comprises two studies, designed to address both the need for psychometrically-sound measures of religious beliefs about suffering and to explore relationships between cognitions about suffering and well-being. The first was a validation study of the VOSS, examining the scale's properties in a non-college-student sample. For this study, a large, religiously diverse online sample was recruited to examine the VOSS' factor structure, validity, and potential usefulness with multiple religious groups. Importantly, this study allowed us to examine differences in these beliefs across religious groups.

The second study examined how beliefs about suffering might be related to well-being in a sample of senior citizens using a longitudinal design. Variables of interest include basic demographics, religious beliefs, physical and mental health, and life stressors. This longitudinal study provides much-needed data about beliefs about suffering as potential predictors of well-

being and the stability of beliefs. Together, these studies represent a significant step forward in research on religious beliefs about suffering and open up a whole new line of research for future scholars who wish to continue exploring suffering and related constructs including images of God, individuals' perceptions of locus of control, and attributions regarding suffering.

Study 1 Method

Participants and Procedures

Study 1 explored the VOSS' psychometrics in a diverse sample using Amazon Mechanical Turk (MTurk). MTurk is a crowdsourcing marketplace that allows "requesters" to post tasks to be fulfilled by online users ("workers") (Ipeirotis, 2010; Paolacci, Chandler, & Ipeirotis, 2010). A total of 1000 participants were recruited with quotas for specific groups: 500 Christians (250 Catholics, and 250 Protestants), and 100 each of Muslims, Atheists/Agnostics, Jewish, Hindu and Buddhist. The number of Christians recruited for this study was larger than that of other religious traditions in keeping with the religious distribution within the United States (Pew, 2008). To participate in this study, workers had to reside in the United States and self-identify as one of the targeted recruitment groups.

Participants selected the survey based on the MTurk task description. The study description visible to all MTurk workers stated: "Answer a 30 minute research survey about your religious beliefs & views. People who consider themselves Muslim/Islamic [or Protestant, Catholic, Hindu, etc.] in their beliefs are welcome to participate in this survey." In keeping with MTurk best practices, the survey included five attention check questions to confirm that all participants were engaged in the survey (Amazon Mechanical Turk, 2011). Both the study description and the information sheet informed participants that the survey included five attention-check questions and only data from workers who answered all of these questions

correctly would be paid and included in the research study. The questions included items such as "I consider myself Catholic" (for Catholic participants) and "Have you ever had a fatal heart attack while watching TV?" (yes/no response). If an individual did not answer all of the attention-check questions correctly their data was not used.

Measures

Demographic questionnaire. Demographics included age, gender, race, income, level of education, and state of residence. Participants were also asked about their self-ranking regarding their level of religiousness or spirituality, belief in God, and religious history (i.e., whether or not they had had religious or spiritual experiences that changed their lives, whether they had had a significant gain or loss of religious faith). Religious demographic items were from the Brief Multidimensional Measure of Religion and Spirituality (BMMRS; Fetzer & NIA, 1999) except for the question related to belief in God (Rohrbaugh & Jessor, 1975).

Christian Orthodoxy Scale (Short Form). The *Christian Orthodoxy Scale* (*Short Form*) was used to test the VOSS' validity. This abbreviated form of the 24-item *Christian Orthodoxy Scale* (Hunsberger, 1989) is a 5-item questionnaire related to orthodox Christian tenets (Hill & Hood, 1999; Hunsberger, 1989). Responses on the seven-point Likert scale range from 0 ("strongly disagree") to 6 ("strongly agree"), including a neutral option. Examples of items include, "Jesus was the divine Son of God" and "Despite what people believe, there is no such thing as a God who is aware of our actions" (reverse scored). Higher scores on the scale reflect a more orthodox religious orientation. Previous studies indicate that the *Christian Orthodoxy Scale* has excellent psychometrics with a mean inter-item correlation of .72, a Cronbach's alpha of .94, and individual item correlations of >.76 (Hunsberger, 1989). In this sample the Chronbach's alpha was .92.

The *Christian Orthodoxy Scale* was included to assess validity of the *Unorthodox* scale. It was hypothesized that Christian orthodoxy scores would be negatively correlated to *Unorthodox* scores. It was also expected that orthodoxy scores would be highly correlated with *Overcoming* and *Providence* scores, as two of the perspectives that assume an orthodox view of God.

World Assumptions Scale. The *World Assumptions Scale* (WAS) was included to examine the validity of several VOSS subscales. The WAS is a 32-item questionnaire with eight subscales (Janoff-Bulman, 1989), four of which we planned to use in analyses. The scale's questions center on assumptions about the benevolence of the world (e.g., "There is more good than evil in the world"), benevolence of people (e.g., "Human nature is basically good"), justice (e.g. "Misfortune is least likely to strike worthy, decent people"), controllability (e.g., "People's misfortunes result from mistakes they have made"), randomness (e.g., "The course of our lives is largely determined by chance"), self-worth (e.g., "I often think I am no good at all"), self-controllability (e.g., "I usually behave in ways that are likely to maximize good results for me"), and luck (e.g., "I am basically a lucky person"). The WAS responses are based on a 5-point Likert scale ranging from 0 ("strongly disagree") to 4 ("strongly agree"). All scales were shown to have reliability between .67 and .78 (Kaler et al., 2008). In this sample all scales had alphas of .74 to .86.

We expected that high WAS *Randomness* subscale scores would positively correlate with VOSS *Random* scores, and WAS *Justice* scores would similarly correlate to VOSS *Retribution* scores since both concepts assume that people get what they deserve in life. WAS *Luck* scores were expected to correlate negatively with high VOSS *Providence* scores since the latter assumes that there is a God orchestrating events rather than assuming that events are a matter of

chance. Lastly, scores on the WAS *Self-Control* scales were expected to correlate positively with VOSS *Retribution* scores because, in theory, the belief that one's actions directly influences the future should positively relate to beliefs about the world's controllability.

God Image Scales. The *God Image Scales* (Lawrence, 1991, 1997) were also included to examine the validity of several VOSS subscales. This study utilized the *Benevolence, Providence,* and *Challenge* subscales of the *God Image Scales (GIS*) (Lawrence, 1997). The *GIS* assesses individuals' perceptions of God using 12 items per subscale. *Benevolence* accesses beliefs related to divine goodness, *Providence* measures beliefs in divine control, and *Challenge* examines beliefs that God's goal is to help people to grow. Examples of items include "I think of God as more compassionate than demanding" (*Benevolence*), "I think God mostly leaves people free" (*Providence*), and "God wants me to achieve all I can in life" (*Challenge*). All *GIS* subscale responses are based on a 4-point Likert format with choices from 0 ("strongly disagree") to 3 ("strongly agree"). Internal reliability coefficients for all scales range from .86 to .94 (Lawrence, 1991). In this sample alphas ranged from .82-.86.

It was expected that scores on the *GIS Benevolence* scale would be negatively correlated with VOSS *Unorthodox* scores and positively related to VOSS *Suffering God*, since belief in God's benevolence is a core orthodox tenet and belief in a God who suffers with people presupposes a God who is compassionate towards people. Similarly, it was expected that the *GIS Challenge* and VOSS *Soul-Building* subscales would be positively correlated since the latter frames suffering as a challenge from God. Similarly, scores on the *GIS Providence* and VOSS *Providence* scales were expected to correlate highly since they both relate to the level of divine control over individual suffering. *GIS Providence* was expected to correlate negatively with

VOSS *Random* scores since a high endorsement of belief in providence presumes that events occur as a direct result of divine intervention.

Paulhus Deception Scales. The *Paulhus Deception Scales (PDS*), also known as the *Balanced Inventory of Desirable Responding* (*BIDR*), includes two subscales (Paulhus, 1998). This study included the 20-item *Image Management* (*IM*) scale, which identifies conscious attempts at self-enhancement. The *PDS* uses a 5-point Likert format with choices ranging from 1 ("not true") to 5 ("very true"). Examples of items include, "I never cover up my mistakes" and "I have done things that I don't tell other people about" (reverse scored). Individuals who score extremely high or extremely low on this scale could be "faking good" or "faking bad" and the validity of their responses should be questioned (Paulhus, 1998). Previous research demonstrated an internal reliability coefficient alpha of .70-.75, and the *IM* scale's reliability as .81-.86. The *PDS* was included to explore the possible influence of social desirability both in individual scores and within specific religious groups. Cronbach's alpha for the *IM* scale in this sample was .84.

Analytic Plan

In this study we sought to both examine—in a community sample – previously identified relationships between VOSS subscales and established measures, and to explore new areas that might inform our understanding of the VOSS' validity as a measurement tool. We examined correlations with other established measures and looked at the VOSS' relationship with specific demographic variables. We also examined VOSS scores in relation to social desirability.

We had several hypotheses related to how the VOSS' subscales would relate to one another and to several established measures of related constructs. Specifically, we hypothesized that the VOSS subscales based on the most traditional Christian and monotheistic beliefs (e.g.,

Divine Responsibility, *Providence*, *Soul-Building*, *Suffering God*, *Overcoming*, *Encounter, Limited Knowledge*) would all be positively correlated. We hypothesized that they would have negative correlations to *Unorthodox* beliefs. We hypothesized that *Providence* in particular would be strongly negatively correlated to *Random* beliefs, since they are antithetical to one another (i.e., the former states that suffering happens within divine planning, the latter without any overarching plan).

Regarding relationships with other measures, we hypothesized that the Christian Orthodoxy scale would be positively correlated to the *Divine Responsibility*, *Providence*, *Soul-Building*, *Suffering God*, *Overcoming*, *Encounter,* and *Limited Knowledge* subscales. Each of these views is present in traditional Christian teachings, and people high in Christian Orthodoxy would be expected to endorse traditional Christian views. For this same reason, we expected that *Unorthodox* scores would be negatively correlated to responses on Christian Orthodoxy.

For the GIS, we expected that VOSS and GIS *Providence* scores would be highly positively correlated since they access similar constructs. We expected the VOSS *Soul-Building* and GIS Challenge subscales to be positively correlated for the same reason. VOSS *Suffering God* scores were expected to correlate positively to GIS Benevolence, since the *Suffering God* perspective emphasizes a benevolent God who shares in people's experiences of suffering. Based on the previous research and the fact that most of these beliefs are not mutually exclusive, we expected many of the VOSS monotheistic subscales to be positively correlated with Christian Orthodoxy and the GIS subscales.

For the WAS subscales, we hypothesized that the WAS *Random* and *Luck* scales would both be positively correlated to VOSS *Random* and negatively to VOSS *Providence* since the idea of a divine being who controls events is antithetical to the idea of randomness. We expected

that WAS *Justice* and Controllability scores would correlate positively to VOSS *Retribution* scores since all of these assume that individual actions can impact outcomes, and that WAS Self-Controllability would be negatively correlated to VOSS *Random* scores since belief in randomness implies that individuals cannot control their circumstances.

We planned to analyze relationships between specific demographic variables and VOSS subscales to further examine the measure's validity. We anticipated that respondents from theistic religions (e.g., Hinduism, Christianity, Islam, Judaism) would have higher scores on theistic subscales than Atheists or Agnostics. Since denomination is sometimes used a proxy for beliefs (Musick, 2000), we hypothesized that some of the beliefs central to specific denominations would be highly correlated to an individual's membership in a specific Christian denomination (e.g., Baptists more likely to have high scores on *Providence*).

We also hypothesized that there would be relationships between VOSS subscale scores and geography. We planned to analyze VOSS scores in relation to general geographic regions of the United States known to have significant cultural differences and expected that *Unorthodox* and *Random* scores would be higher in less religious areas (e.g., the West and Northeast) and lower in areas where traditional Christian practices are still a cultural norm (e.g., the South, a.k.a. the "Bible Belt").

As with the previous VOSS validation study, we hypothesized that there could be relationships between VOSS subscales and an individual's race or ethnicity (see Uecker, Regneres, & Vaaler, 2007, for more background). We planned to test this with a one-way ANOVA, using the Games-Howell post-hoc tests because the assumption of equal variance was violated, given our unequal sample sizes. Specifically, given Blacks' typically higher levels of religiosity than non-Hispanic Whites (Pew Forum, 2008; Taylor, Chatters, Jayakody, & Levin,

1996) and the fact that the majority of Americans tend to be Christian, we expected to see relationships between race and theistic subscales such that Blacks would tend to score higher on the theistic VOSS subscales than Whites. This is similar to assumptions that other studies have made along racial lines (e.g. Musick, 2000).

Finally, we planned to analyze VOSS scores in relation to participants' responses regarding social desirability. We hypothesized that the VOSS subscales would not be related to specific patterns of socially desirable responding. If this was not the case, we planned to conduct further analyses to determine if there was a particular group of respondents (e.g., religious affiliation, gender, age, race, etc.) for whom the VOSS (or a specific subscale within the VOSS) might not be a valid instrument.

Study 1 Results

Participants

General demographics. A detailed breakdown of participant demographics grouped by religious affiliation appears in Table 2. Overall, participants in Study 1 were 48.3% male (N=483) and 51.3% female (N=513). They varied in age, with 29% (N=286) between 18-24 years old, 38% (N=380) were 25-34, 15.7% (N=157) were 35-44, and 10.4% (N=104) reported being 45-54. A remaining 6% (N=60) were 55-64 and 0.8% (N=8) were older than 64. In terms of ethnicity, participants were 66.1% White Non-Hispanic (N=661), with 2.7% American Indian/Alaska Native (N=27), 12.9% Asian (N=129), 6.2% Black (N=62), 4.4% Hispanic or Latino (N=44), 1.1% Native Hawaiian/Pacific Islander (N=11), and 6.4% Biracial/Other (N=64).

The sample was also economically diverse, with 6.7% earning $10k or less (N=67), 9.7 earning $10k -$20k (N=97), 17.3% reporting $20k-$30k (N=173), 18.1% earning $40k-$50k (N=181), 18.4% reporting $50k-$60k (N=184), 15.8% earning $70k-$100k (N=158), and 12.9%

reporting more than $100k (N=129) in income. Finally, participants lived throughout the United States. Grouping them by geographic region showed that 34.7% (N=347) were from the South, 19% (N=190) lived in the Midwest, 21.5% (N=215) were from the Northeast, 18% (N=180) were from the West Coast, and 6.6% (N=66) lived in the Southwest. In terms of education, 1.7% (N=17) completed some high school, 9.6% (N=98) have a high school degree, and 33.7% (N=335) finished some college. Another 37% earned a college degree, and the remaining 18% (N=175) had a graduate degree.

Religious Demographics. In keeping with the study's recruitment goals, participants were religiously diverse. The final sample included 11.1% (N=111) who identified as Atheist/Agnostic, 8.5% reported being Jewish (N=85), 9.6% identified as Muslim (N=96), 9.5% were Hindu (N=95), 9.8% were Buddhist (98), 22.6% identified as Catholic (N=226), and 26% were Protestant (N=260). A detailed summary of religious variables grouped by religious affiliation is provided in Table 3.

The majority of participants considered themselves moderately to very religious. Muslims self-identified as the most religious, with 31% saying they were "very religious," and 47% reporting they were "moderately religious." Jews, Protestants, and Hindus reported lower levels of religiousness, with 19-20% "very religious" and 19-45% "moderately religious." Next came Catholics and Buddhists, with 8%-14% reporting they were "very religious" and "40-42% saying they were "moderately religious." Not surprisingly, none of the Atheist/Agnostic participants identified as "very religious," and only 2% were "moderately religious."

Levels of spirituality varied between groups but were consistently higher than reported religiosity. Protestants reported the highest levels of spirituality, with 44% identifying themselves as "very spiritual" and 38% as "moderately spiritual." Muslims, Hindus, and

Buddhists all had similar levels, with 37%-38% of reporting they were "very spiritual" and 40%-46% "moderately spiritual." Catholics and Jews reported less spirituality (24-28% were "very spiritual" and 33-41% "moderately spiritual"). As with the previous self-ranking, Atheists/Agnostics' levels of spirituality were the lowest, with 13% identifying as "very spiritual" and 12% as "moderately spiritual."

Participants also varied in their belief in God according to religious affiliations. As with the self-ranking variables, Protestant and Muslim respondents reported the most belief in an individual God (20-26% chose "Although I sometimes question His existence, I do believe in God […]" and 63-67% reported, "I am sure God exists[…]."). The majority (68%-72%) of Hindus and Catholics also reported belief in a personal God, as did 50% of Jews. Buddhists tended to believe in a higher power (43%) rather than a personal God (27%). Predictably, Atheist/Agnostics reported the lowest levels of belief in God; 70% either definitely did not believe or did not know if they would ever believe.

Finally, participants from each religion reported having had religious or spiritual experiences that changed their lives. More than half (51-57%) of Protestants, Muslims, and Hindus reported having had a life-changing religious or spiritual experience. Fewer Jews, Buddhists and Catholics reported experiences (34-44%). Of the Atheist/Agnostic respondents, 14% reported having had a religious or spiritual experience that changed their lives. Regardless of religious affiliation, the majority of the reported experiences (59-79%) occurred before the age of twenty-two.

Confirmatory Factor Analysis

Prior to beginning the factor analysis, we first tested the data to determine levels of missing data and whether the data were normally distributed. Missing data analyses showed that

all variables had less than 1.2% missing data so missing data points were addressed using listwise deletion. Prior to analysis, data were examined for normality and results of the D'Agostino, Belanger, and D'Agostino (1990) test for normality with the Royston (1991) correction (Acock, 2012) indicated that all of the VOSS items had significant skew and kurtosis. Given the fact that we deliberately recruited a much larger number of Christians (Protestants and Catholics) than other religious groups, this non-normal distribution was not surprising. All variables were transformed using either log or square root functions before being used in the factor analysis.

After addressing the data distribution issue, we then analyzed the data using Confirmatory Factor Analysis (CFA) and tested the two best-fitting models identified in the VOSS' earlier development (Hale-Smith et al., 2012). First, using AMOS 20.0, a CFA using maximum-likelihood estimation was conducted to test a 10-factor model (Model 1) previously identified as having the best fit. Second, we tested a model previously rejected in VOSS development but which had previously had strong fit indices. This second model specified a 2nd order Traditional Christian Beliefs factor with each of the traditional Christian subscale variables as indicators (e.g. *Divine Responsibility*, *Suffering God*, *Soul Building*, *Providence*, etc.).

Multiple fit indices were used to determine the acceptability of each model. Standard cutoff recommendations were employed to determine levels of acceptable fit, including the comparative fit index (CFI), root-mean-square error of approximation (RMSEA), and Akaike's information criterion (AIC; Akaike, 1974). There is some variation in what levels of fit are considered acceptable, but generally a CFI greater than .90 is considered acceptable (Bentler, 1990; Finch & West, 1997) and greater than .95 is considered good (Hu & Bentler, 1999). For the RMSEA statistic, levels should be lower than .08 (Browne, Cudeck, Bollen, & Long, 1993),

ideally less than .05 (Brown, 2006). The AIC is used to compare the fit of non-nested models and a lower AIC should be chosen as the model that provides the best balance of fit and parsimony (Schumacker & Lomax, 1996). In addition to these model fit statistics, we also examined the standardized regression weights to determine factor loadings for each item.

Model 1. Model 1 provided a good fit to the data, χ^2 (1439.93) = 360, p< .000; χ^2/df = 4.0; CFI= .95; RMSEA=.06 (90% CI= .05-.06); AIC= 1709.93. These model fit statistics fit well within the desired range for both CFI and RMSEA. Standardized regression weights for all variables ranged from .6 to .9, indicating that in addition to reaching standards of good model fit, the items loaded strongly onto the expected factors.

Model 2. Model 2 did not fit the data as well as Model 1. All the fit statistics for this model were much worse: χ^2 (3771.53) = 399, p< .000; χ^2/df = 9.45; CFI= .83; RMSEA=.09 (90% CI= .09-.10); (AIC= 3963.54). In addition, to the poor statistics of CFI and RMSEA, the AIC for Model 2 was much higher than that of the previous model, further confirming the fact that this model does not fit the data.

Descriptive Statistics and Reliability

In this study, mean scores for individual subscales of the VOSS ranged from 6.01 (SE = .12) to 11.27 (SE = .14) and are outlined in Table 4. Scores were generally lower than the subscale midpoint of 10.5, with standard deviations ranging from 3.65 (*Unorthodox*) to 4.77 (*Suffering God*). Reliabilities of all subscales were excellent, with all Cronbach's alpha values within the recommended range of .7-.9 (Nunnally & Bernstein, 1994); they ranged from .72 (*Divine Responsibility*) to .91 (*Soul-Building*). Table 5 presents descriptive statistics for VOSS subscales divided by world religions.

Convergent & Divergent Validity

After confirming that the VOSS' factor structure was consistent with previous studies and that individual subscales demonstrated good reliability, we began examining the hypotheses outlined in the earlier data analytic section. The majority of hypotheses were confirmed, with a few exceptions. Table 6 outlines the relationships found between VOSS subscales, while Table 7 presents VOSS subscale scores in relation to the other measures of interest.

Most of the hypotheses regarding relationships between the VOSS scores themselves were confirmed. As expected, all of the beliefs found in traditional Christianity and other monotheistic religions were positively correlated ($p<.01$). *Unorthodox* beliefs were negatively correlated to all theistic subscales as predicted, with the exception of a positive correlation to *Limited Knowledge* ($r=.40$, $p<.01$). *Providence* was also negatively correlated to *Random* beliefs, as hypothesized ($r=-.34$, $p<.00$).

The relationships with other established measures also appeared as expected. All the VOSS subscores based on traditional Christianity were positively correlated with Christian Orthodoxy scores. VOSS *Providence* scores correlated positively to GIS *Providence* (r=.66, $p<.01$), and negatively to WAS *Random* (r=-.35, $p<.01$). VOSS *Soul-Building* was similarly positively correlated to GIS Challenge (r=.67, $p<.01$), a stronger relationship than it had to any other subscale. Similarly, VOSS *Suffering God* scores were related as predicted to GIS *Benevolence* (r=.53, $p<.01$). As anticipated, all of the VOSS monotheistic subscales were positively correlated with Christian Orthodoxy and the GIS subscales.

Our hypotheses about the VOSS *Random* and *Retribution* scores were also supported. VOSS *Random* scores were negatively correlated to Christian Orthodoxy scores, all GIS scales, and WAS *Controllability* scores at the level of $p<.01$ but were positively correlated to WAS *Random* (r=.68, $p<.01$) and WAS *Luck* (r=.10, $p<.01$). In contrast to our hypothesis, *Random*

scores were also positively correlated to WAS *Self-Controllability* (r=.10, $p<.01$). VOSS *Retribution* scores were positively correlated (r=.44, $p<.01$) to WAS *Justice* and Controllability (r=.40, $p<.01$) and negatively correlated with WAS *Random* scores (r=-.10, $p<.01$).

Our hypotheses regarding VOSS subscales and demographics were also mostly confirmed. As predicted, Black participants scored significantly higher ($p<.05$) than White respondents on most theistic measures reflective of traditional Christian beliefs (i.e. *Divine Responsibility*, *Providence*, *Soul-Building*, *Suffering God*, *Overcoming*, and *Encounter*) and significantly lower (p<.05) than Whites on *Unorthodox* and *Random* subscales. There were no significant racial differences between Blacks and Whites on the *Limited Knowledge* or *Retribution* subscales.

Our hypotheses regarding where an individual lived were also supported. Not surprisingly, participants in the South (a.k.a. "Bible Belt") had lower rates of *Unorthodox* beliefs than participants on the West Coast as did those from the Midwest (both $p<.05$). People on the West Coast had lower beliefs in *Divine Responsibility* and *Overcoming* regarding suffering, in contrast to those in the South ($p <.05$).

Our hypotheses regarding how individuals' beliefs in God and their religious affiliations would relate to their VOSS scores were also supported. Individuals with higher levels of belief in God endorsed more belief in most traditional theistic scales (*Divine Responsibility*, *Providence*, *Soul-Building*, *Suffering God*, *Overcoming*, and *Encounter*) with significant differences between each level ($p<.01$). Individuals with more belief in God generally endorsed fewer beliefs in *Unorthodox* or *Random* views of suffering (most $p<.01$), but there was some variation in those responses. For example, there were no significant differences in the way that people who stated that they definitely believed in a personal God and people who definitely did

not believe in any God or higher power responded to questions related to unorthodox views of suffering.

When we looked at the relationships between VOSS beliefs and religious affiliation, again most hypotheses were supported. Results also indicated that there were significant differences in the way that adherents to the major world religions responded to specific beliefs even after covarying for age, gender, ethnicity, income, and education. All of the subscales differed at significance levels of $p<.01$ when Christianity, Islam, Hinduism, Buddhism, Judaism and Atheists/Agnostics were compared. Of particular importance for our validity testing, we found that individuals who identified themselves as Atheist/Agnostic were likely to have significantly higher VOSS *Random* scores than individuals from any other world religion. Similarly, Hindus and Buddhists were likely to have much higher scores than any other religious group on the VOSS *Retribution* subscale. While not all differences between religious groups were significant, there was a general trend such that the monotheistic religions all endorsed higher levels of belief in the theistic items (i.e. *Divine Responsibility*, *Providence*, *Soul-Building*, *Suffering God*, *Overcoming*, *Encounter, Limited Knowledge*) while the non-monotheistic (i.e. Atheist/Agnostic, Buddhist, Hindu) religions tended to score lower on these items.

Although there were not enough participants to run analyses by individual denomination, to facilitate analyses we were able to group Protestants by broad theological traditions (e.g. key teachings regarding holiness, predestination or the Holy Spirit; see Figure 1). Groups were determined based on our knowledge of church history and the theological shifts that produced new denominations. We chose to do this rather than grouping denominations on church polity or another characteristic because our construct of interest was beliefs.

After analyzing them by theological groups, we found that they generally did not vary significantly in their theistic beliefs. The only significant differences between denominations occurred in the *Divine Responsibility* and *Limited Knowledge* subscales. For the former, Catholics reported lower scores than people grouped as Mainline Protestants, Charismatic Protestants, Historic Protestant Theology, or AME/African American Churches (all $p<.05$). For *Limited Knowledge*, Charismatic Protestants had significantly lower scores ($p<.05$) than Catholics, Mainline Protestants, and other denominations. Members of AME/African American Churches also reported lower scores on this subscale than Catholics, Anglicans, Mainline Protestants, Historic Protestants, and Protestants from other denominations (all $p<.05$). Participants from denominations endorsing theology from historic Protestant tradition tended to have higher scores on the *Providence* subscale as predicted, but this difference was not significant. When an ANCOVA was run controlling for age, gender, ethnicity and income these findings remained significant

VOSS Responses & Social Desirability

In addition to examining the VOSS' relationships with demographic variables and other established measures, we also tested for the potential impact of social desirability on VOSS responses using one-way ANOVAs. Sums of *Overcoming* tended to be higher for those with invalid social desirability scores, specifically for those who were categorized as "faking good" (i.e. presenting themselves in an overly positive light).

Study 1 Discussion

Replication of factor analysis and reliability in multiple samples are essential in the measure development process, and it appears the VOSS has passed these tests with flying colors. This study confirms that the VOSS' factor structure is strong, functions reliably, and appears to

be valid for use in the general United States population.

The study replicates and extends information about the VOSS in several significant ways. First, the fact that the VOSS held its factor structure within this large, diverse sample and demonstrated excellent reliability suggests that the VOSS may be used outside of the college student population on which it was originally tested. The VOSS factor structure proposed in its initial publication appears to be a good fit for the model and no adjustments were made in order to attain the desired fit indices. The fact that the VOSS maintained its 10-factor structure and individual scales were reliable suggests that the subscales can indeed be used separately as originally designed. This structure allows researchers to select individual scales based on what they think could be most relevant to their specific populations, and leaves open the possibility of developing new subscales for other religious groups whose beliefs are not currently represented within the VOSS.

This study also indicates that the VOSS has adequate validity based on associations between subscales and associations with other established measures and demographic variables hypothesized to be connected to specific beliefs. Most of our hypotheses regarding the VOSS were supported, with the exception of how the *Limited Knowledge* scale functioned.

As outlined earlier, we found that the *Limited Knowledge* subscale was positively correlated to *Unorthodox* beliefs and had a curvilinear relationship with belief in God; it was also endorsed by fewer theologically conservative denominational groupings. Although these relationships were not predicted, this does not necessarily imply that the *Limited Knowledge* subscale is invalid; rather, it suggests that our expectations as researchers were too narrow.

The *Limited Knowledge* perspective as articulated in the VOSS does not explicitly state anything that would make it impossible for an individual to endorse an *Unorthodox* perspective:

the *Unorthodox* items focus on divine benevolence, whereas the Limited Knowledge questions center on divine foreknowledge. An individual who does not believe in God's benevolence could also reasonably reject belief in divine omniscience and/or foreknowledge.

The way that *Limited Knowledge* appears to function differently from other theistic subscales actually reflects a broader tension within Christianity. There are some who see Open Theism (the theological perspective upon which the Limited Knowledge subscale is based) as a doorway to more explicit heresy in which God's omniscience would be rejected, but most Open Theists see themselves as being firmly planted within orthodox Christianity (Smith, 2005). *Limited Knowledge*'s complex relationship with both theistic and atheistic variables actually supports the subscale's validity in a way we did not anticipate, showing clearly the variation within open theist beliefs.

Our other unsupported hypotheses regarding VOSS subscales and denominational differences may also be conceptualized as an interesting reflection of American Christianity. We had hypothesized that some of the VOSS subscales would be more strongly endorsed by specific denominations or denominational groupings because of the official theology associated with those denominations, but this was generally unsupported. Although it is possible that the lack of pattern in how people respond based on denomination indicates that the VOSS is not a sensitive instrument, an alternative interpretation is that denomination is a relatively weak and imprecise proxy for belief.

The research on denominational stability is mixed, with some research noting that up to 44% of Americans have changed religious traditions (Pew, 2008) and others finding that these changes tend to be in the same denominational "families" (Hadaway & Marler, 1993). Given the VOSS' otherwise strong validity in relation to other established measures and the knowledge that

Americans are not known to be loyal to specific denominations one likely explanation is that the individuals responding to the VOSS are not necessarily themselves firm believers of all the points of their denomination's dogma. In addition to confirming the VOSS' reliability and validity as a measure of beliefs about suffering, this study also raises some important points for future study of the psychology of religion. It suggests that the study of beliefs should indeed focus on content of beliefs, and raises questions about the generalizability of research findings on "religion."

First, it would appear that the study of the content of beliefs does indeed have merit. When VOSS scores were analyzed by major religious group, there were significant differences on every subscale, with far too many differences to detail in this paper.

Second, and perhaps more importantly, the variation in responses indicates the obvious: not all religions are the same, and we do them a disservice as researchers when we make this assumption. There are significant differences in how people from different religious backgrounds interpret and respond to suffering. Given this reality, researchers must learn to be much more circumspect with their claims. Right now many studies claiming to study "religion" have primarily Christian samples with limited representation of other beliefs. This is understandable given the U.S. religious demographics, but we must acknowledge that we have little idea of how different religions' beliefs function in comparison to one another. As researchers we must be more forthcoming about limitations and make fewer assumptions about the generalizability of our findings.

While it may be every researcher's dream to have large samples in which multiple religions are represented with adequate power to examine minute differences, the reality is that most of us do not have access to those sorts of samples: in the United States, those participants

are usually Christian, because 78% identifies themselves as Christian (Pew, 2008). This does not invalidate research findings to date, but it does suggest that assertions about "religion" when only one or two religious groups are represented may have limited generalizability. Assuming that findings will prove equally true for people in other religions is simply not warranted, given the variation in beliefs and practices across religions and even within one religion (e.g., Christianity).

Study 2 Overview

In Study 2, we focused attention on the questions of whether the content of individuals' beliefs about suffering related to their well-being and/or the stressful life experiences they had experienced, and whether or not those three factors are interrelated. In order to capture a range of beliefs, we recruited participants outside of religious contexts, and in order to obtain the greatest number of life experiences we focused recruitment exclusively on senior citizens. We surveyed participants at two time points three months apart, with the expectation that this would provide enough time to allow for change beliefs while minimizing attrition.

Since this is the first research on this topic, we planned to examine relationships between VOSS subscales, life stress, and well-being using an exploratory framework. We wanted to see if beliefs were stable between Time 1 and Time 2, but more importantly we needed to explore relationships between beliefs and well-being in the context with an open mind because we could think of several plausible but contrary hypotheses for most beliefs. For example, beliefs in suffering as a random occurrence might be positively correlated to anxiety if a person believes he or she cannot predict or control negative events, or belief in randomness might be negatively correlated to anxiety because it could alleviate blame or guilt.

We identified three main questions that we hoped to answer with this data. First, are

beliefs associated with well-being? Within this broader question, we wondered if there might be interactions between beliefs and other religious factors that could moderate how beliefs impacted well-being, since previous research has identified moderating factors (e.g. Park, Cohen, & Herb, 1990). For example, we wondered if the extent to which an individual considered himself or herself religious might change the extent to which those beliefs were integrated into his or her life and had an effect on well-being. We also wondered if the way in which an individual perceived God might mediate how some of the monotheistic beliefs were experienced (e.g., anticipating an encounter with a punishing God would theoretically have different effects than anticipating an encounter with a loving God). Although these were our primary research questions, we also planned to assess belief stability over time. Given that religious beliefs in older adults are thought to be relatively stable (Hamberg, 1991), we did not expect to see any significant differences between subscale means from Time 1 to Time 2.

Our second main research question was whether beliefs about suffering related to participants' life-experiences, and whether these two factors might predict well-being outcomes. In particular, we wondered if having had more stressful life experiences or a certain category of life experiences (e.g., interpersonal stressors) might predict some beliefs about suffering. We also hoped to examine whether experiencing new stressful life experiences (e.g., additional items on the LSC-R between Time 1 and Time 2) might change an individual's beliefs.

Our third main research question was related to relationships between beliefs about suffering and individuals' perceptions of and reactions to stressors. We wanted to see if an individual's assessment of an intervening stressor at Time 2 might be predicted by their beliefs at Time 1, or if their assessment of the stressor could be predicted in any way by changes in belief that may have occurred between time points. We also wanted to see if perceptions of post-

traumatic growth at Time 2 were associated with specific beliefs about suffering at Time 1 or by recent changes in belief. Lastly, we wondered if there would be any differences in the way that people coped based on their beliefs.

Methods

Participants & Procedures

Study 2 examined relationships between beliefs about suffering, well-being, and life experiences using a longitudinal sample of older adults recruited at senior citizens' centers in the Northeast. Older adults were chosen for this study because they were likely to have experienced a greater range of stressful events than would a younger sample, and a 3-month interval was selected for Time 1 and Time 2 in order to allow for possible changes of belief and new experiences while minimizing attrition. All adults at the senior centers were welcome to participate regardless of religious beliefs or other demographic variables, but individuals with obvious cognitive impairments (e.g. dementia, Alzheimer's) or who were unable to read the questions for themselves were excluded.

In order to enroll participants, researchers obtained permission to set up a table in a well-trafficked area of each center on days with popular activities (e.g. lunches, exercise classes, card games, blood pressure clinics) and distributed recruitment flyers, information sheets and paper copies of the survey. Participants could either fill out the survey while at the center or could take home a stamped, addressed envelope and return the survey via postal mail. Time 2 surveys were distributed three months after Time 1 either in person when the researchers returned to the senior center or via postal mail.

In exchange for filling out each 20-minute survey, participants were given a $5 gift card to Dunkin Donuts. In order to increase recruitment and retention, all participants were also

entered in three monthly raffles between Time 1 and Time 2 for the chance to win one of three $25 gift cards to CVS or Walgreens. Surveys were identified only with ID numbers assigned in the order that participants were enrolled in order to protect participant confidentiality.

Measures

Demographic questionnaire. Demographics included age, gender, race, marital status, income, and level of education. Participants were also asked about their self-ranking regarding their level of religiousness or spirituality (Fetzer & NIA, 1999), their current religious preference, and belief in God (Rohrbaugh & Jessor, 1975). Religious variables were included at both Time 1 and Time 2 and participants had the option of writing in their religious preference if it was not listed on the survey form. At Time 2 they were also asked if they had experienced any significant gains or losses in their religious faith since the last time they took the survey (Fetzer & NIA, 1999).

Views of Suffering Scale (Hale-Smith et al., 2012)**.** The Views of Suffering Scale was included to measure beliefs about suffering at both Time 1 and Time 2. Detailed information regarding the VOSS' development and psychometrics is outlined earlier in this paper.

Depression, Anxiety, & Stress Scale (DASS-21). The DASS-21 (Lovibond & Lovibond, 1995) was used as a quantitative measure of participant symptoms of distress at both Time 1 and Time 2. The DASS-21 consists twenty-one items divided into three subscales measuring depression, anxiety and stress, and has been validated for used in research with older adults (Crawford & Henry, 2003; Crawford, Cayley, Lovibond, Wilson, & Hartley, 2011). Items include statements such as "I found it hard to wind down," "I felt that I had nothing to look forward to," and "I was intolerant of anything that kept me from getting on with what I was doing." Responses are based on a 4-point Likert scale ranging from 0 (*Did not apply to me at all*)

to 4 (*Applied to me very much, or most of the time*) and participants are asked to consider the experiences of the previous week. Responses may be summed to provide scores on a continuum or a cutoff may be used to identify a level of severity ranging from *Normal* to *Extremely Severe*. Higher scores indicate greater symptom severity. Previous studies indicate that the DASS-21 had acceptable psychometrics with reliability alphas of .81-.91 (Lovibond & Lovibond, 1995). Cronbach's alphas for the DASS-21 in this sample were .72-.84.

Positive States of Mind Scale (PSOMS). The PSOMS (Adler, Horowitz, Garcia, & Moyer, 1998; Horowitz, Adler, & Kegeles, 1988) was also used as a measure of participant well-being at both Time 1 and Time 2. The PSOMS is a seven-item questionnaire measuring seven mental states including ability to focus, be productive, care for one's self or another person, relax, share with others, and experience positive sensual nonsexual and sexual pleasures. The scale has been well-validated in multiple studies and has consistently demonstrated good reliability (Adler et al., 1998). Responses are based on the previous week and utilize a 5-point Likert scale ranging from 0 (*unable to experience this even though I have wanted to)* to 3 (*easy to experience)* with 4 being (*not relevant – have not wanted to experience it*) (Park, 2008). The PSOMS is scored such that a higher score indicates more positive experiences; responses of *not relevant* do not influence the overall score but may be considered separately. Previous studies indicate that the PSOMS had acceptable psychometrics with reliability alphas of .65-.74 (Adler et al., 1998). Cronbach's alpha in this sample was .77.

SF-12. The SF-12 (Ware, Kosinski, & Keller, 1996) was used to measure both physical and mental health at both Time 1 and Time 2. The SF-12 has been validated on both general and medical adult populations (Ware et al., 1996). An abbreviated version of the SF-36 (McHorney, Ware, & Raczek, 1993), the SF-12 consists of twelve items and provides a standardized Physical

Component Score (PCS) and Mental Component Score (MCS). The PCS measures physical functioning, physical role fulfillment, bodily pain and vitality, while the MCS measures social functioning, emotional role fulfillment, and mental health. Items on the PCS include questions such as "During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?" where responses include *not at all*, *a little bit*, *moderately*, *quite a bit*, or *extremely*. Items on the MCS include questions such as "How much of the time during the *past 4 weeks* have you felt calm and peaceful?" where responses include *all of the time*, *most of the time*, *a good bit of the time*, *some of the time*, *a little of the time*, or *none of the time*. Both the PCS and MCS scores range from 0 to 100, with higher scores indicating better functioning. Results from previous studies (Ware et al., 1996) showed average PCS scores ranging from 36.34 +/- 1.6 (a sample with serious physical and mental health conditions) to 49.32 +/- 0.9 (a sample with mental health but no physical concerns). Average MCS scores ranged from 37.03 +/- 1.1 (a sample with mental health conditions) to 53.82 +/- 0.3 (a sample with minor medical conditions and no identified mental health concerns).

Life Stressor Checklist – Revised (LSC-R). The LSC-R (Wolfe, Kimerling, Brown, & Chrestman, 1996) was used at both Time 1 and Time 2 to measure stressful life events. The LSC-R consists of thirty items identifying stressful events that participants may have experienced in their lifetime. Questions include exposure to natural disasters, interpersonal trauma (e.g. sexual abuse), personal stressors (e.g. divorce, incarceration, serious financial problems), and more general stressors (e.g. parental divorce, a close family member going to jail). In order to reduce participant burden, the simplest recommended scoring method of adding responses together into a single summed score was utilized; participants answered with a *yes/no* response to each stressful event. Given this, we expected that Time 2 summed scores should be

either the same or higher than those at Time 1, if any stressors measured by the LSC-R had occurred in the 3-month interim between time points.

Attitudes Toward God Scale (ATGS). The ATGS (Wood et al., 2010) was included at both Time 1 and Time 2 to measure participants' experiences of religious comfort and struggle. The ATGS consists of 9 items divided into two factors, (1) Positive Attitudes toward God and (2) Disappointment and Anger with God. Responses are based on an 11-point Likert Scale ranging from 0 (*not at all*) to 10 (*extremely*). Participants are instructed to rate each item to the extent that they currently do or feel about God or whatever they call the sacred. Sample items include statements such as "Trust God to protect and care for you" (Positive Attitudes subscale) and "Feel that God has let you down" (Disappointment and Anger with God subscale). Items from each subscale are summed to provide separate scores of positive and negative attitudes such that higher scores indicate higher levels of each factor. Previous studies report that the ATGS has excellent reliability; the Positive Attitudes alphas ranged from .89 to .99 across six studies, while the Disappointment and Anger with God alphas ranged from .64 to .93 (Wood et al., 2010). The Positive Attitudes Cronbach's alpha for this study was .96 and the Disappointment and Anger with God alpha was .80.

Life Orientation Test – Revised (LOT-R). The LOT-R (Scheier, Carver, & Bridges, 1994) was included in the Time 1 survey to assess individual optimism and pessimism. The scale consists of ten items, four of which are filler items and thus not included in the final score. Responses are based on a 5-point Likert scale from 0 (*strongly disagree*) to 4 (*strongly agree*). Sample items include statements such as "In uncertain times, I usually expect the best" and "If something can go wrong for me it will" (reverse scored). The LOT-R provides a single score of

optimism using the six items of interest, where a higher score indicates more optimism while a lower score indicates more pessimism. Cronbach's apha for the LOT-R was .60.

Evaluating new stressors. Four questions were included in the Time 2 survey to assess the impact of a stressor between time points. The first question asked participants to identify the greatest stressor they encountered since the last time they took the survey. Next participants were asked to identify when the event took place (*within the last month*, *within the last three months*, *within the last year and since then*, *it has been going on for more than 1 year but has continued less than 3 years, it has been going on for more than 3 years*, *it has been going on for more than 5 years*). Finally, participants were asked how stressful the event was when it first occurred (initial stress appraisal) and how stressful it is for them now (current stress appraisal) (responses for each included options of *not at all, a little bit, moderately, quite a bit,* and *extremely*).

Brief RCOPE. The positive religious coping subscale of the Brief RCOPE (Fetzer & NIA, 1999) was also included at Time 2 to assess individuals' religious coping strategies in response to the stressor they identified. The Brief RCOPE usually includes two subscales (positive and negative religious coping), but in order to reduce participant burden only the positive coping strategies subscale was used in the Time 2 survey. Participants are instructed to think about how they understand and deal with the previously identified stressor and indicate to what extent each coping strategy is involved in the way they cope. Responses are based on a 4-point Likert scale ranging from 1 (*a great deal*) to 4 (*not at all*). Sample items include statements such as "I work together with God as partners to get through hard times" and "I confess my sins and ask for God's forgiveness." Cronbach's alpha for the RCOPE in this sample was .91.

Brief COPE. The Brief COPE (Carver, 1997) was included at Time 2 to assess participants' coping strategies. The Brief COPE consists of twenty-eight items assessing fourteen coping strategies. Strategies outlined in the Brief COPE include active coping, planning, positive reframing, acceptance, humor, religion, using emotional support, using instrumental support, self-distraction, denial, venting, substance use, behavioral disengagement, and self-blame. Participants were asked to think about the stressor they previously identified and then respond to each statement about a specific coping strategy using a 4-point Likert scale ranging from 1 (*haven't been doing this at all*) to 4 (*doing this a lot*). Sample statements include "I've been turning to work or other activities to take my mind off things," and "I've been getting emotional support from others, and I've been saying things to let my unpleasant feelings escape." Previous studies indicated the Brief COPE subscales had acceptable psychometrics with reliability alphas for most scales between .7-.9; five of the subscales (positive reframing, acceptance, using instrumental support, denial, and venting) had alphas of .5-.6 (Carver, 1997).

Previous studies indicate that the Brief COPE had acceptable psychometrics with reliability alphas of .65-.9 Cronbach's alphas in this sample ranged from .49 (Behavioral Disengagement) to .89 (Religion); the former was the only scale with reliability less than .60.

Post-Traumatic Growth Inventory - Short Form (PTGI-SF). Post-traumatic growth was assessed with the PTGI-SF (Cann et al., 2010) at Time 2. The PTGI-SF consists of ten items representing five subscales of the original PTGI (two items per subscale). Factors include relating to others, new possibilities, personal strength, spiritual change, and appreciation of life. Sample statements regarding potential growth include, "I have a greater appreciation for the value of my own life" and "I have a greater sense of closeness with others." Responses are made on a six-point Likert scale ranging from 0 (*I did not experience this change*) to 5 (*I experienced*

this change to a very great degree). Participants were asked consider the stressor identified earlier and indicate how relevant each statement was in light of their stressor. Previous studies indicate that the PTGI-SF reliability alpha coefficients are good, ranging from .72 to .89. Cronbach's alpha for the current sample was .94.

Data Analytic Plan

We planned to analyze the data with cross-sectional analyses and longitudinal modeling techniques using Stata 12.0, SPSS 20.0, and AMOS 20.0. Before beginning analyses, we determined that we would examine the data for attrition patterns and missing data, then assess for differences in beliefs based on demographic group using ANOVAs.

We planned to begin exploring our first question (i.e., if beliefs are related to well-being) in the cross-sectional data by looking at linear relationships between VOSS subscales and well-being variables using bivariate correlations. Next we would use moderated mediation models to assess direct, indirect and total effects with religious variables (i.e. level of self-identified religiousness) as a moderator. We planned to test models incorporating each of the VOSS subscales and well-being outcomes individually, a total of sixty models.

Another part of this question regarded changes in beliefs, and here we decided to use multiple regression to analyze whether changes in VOSS subscale scores predicted changes in well-being. Finally, we planned to conclude our analyses of beliefs' relationships with well-being by analyzing cross-lag models for each VOSS subscale and outcome variable (i.e., Time 1 beliefs predict Time 2 well-being and vice versa).

To answer our second broad research question regarding the relationships between life experiences, beliefs and well-being we again planned to use a mixture of cross-sectional and longitudinal analyses. We planned to first look at correlations between the number of life

stressors and beliefs, and correlations between interpersonal life stressors and beliefs. Following this we planned to examine moderated mediation models to test whether life experiences moderated the relationships between beliefs and well-being in any meaningful ways. We intended to assess relationships between changes in number of life stressors and well-being using multiple regression, to see if changes in life experiences would predict changes in beliefs.

Finally, in order to answer our third research question of whether beliefs about suffering are related to individuals' perceptions of and reactions to stressors we planned to use multiple regression. We intended to analyze relationships between beliefs and evaluations of stressors, beliefs and perceptions of growth, and beliefs and coping behaviors.

Study 2 Results

Attrition and Data Cleaning

Of the 307 participants who completed the Time 1 survey, 72.6% (N=223) completed Time 2. This attrition rate of 27% is consistent with other longitudinal studies involving adults of this age (e.g., Young, Powers, & Bell, 2006). We conducted chi-square tests to determine if there were relationships in any demographic factors between those who remained and those who dropped out of the study. There were no significant differences for completers vs. non-completers for any demographic variables (i.e. age, gender, race, marital status, education) or religious variables (belief in God, self-ranking of self as religious or spiritual, current religious preference). There were also no significant differences (all $p > .05$) in attrition status based on participants' scores on the well-being measures (DASS-21, SF-12, PSOMS).

After assessing attrition, we then examined the data for missingness. At Time 1, a high percentage of participants (45.3%, N=139) chose not to respond to the question regarding their income. Of the demographic variables, the only others with >5% of missing data were

participants' level of education (10.4% missing, N=32), whether or not they were Hispanic (9.1% missing, N=28), and current religious preference (5.2% missing, N=16). Of the VOSS variables, the second item on the *Retribution* subscale ("Karma is the best explanation for individuals' suffering") had an unusually high percentage of missing data (18.2%, N=56; all other VOSS variables had 5-11% missing data). Based on informal conversations with participants and several comments written in the margins next to this question, some participants were unsure what the word "karma" meant and so chose not respond. Of the variables calculated at Time 1 (e.g., PCS and MCS subscale scores of the SF-12, subscales of the DASS-21), none had more than 15% missing data.

At Time 2, a similar pattern of missingness emerged; the same *Retribution* item on the VOSS had 18.8% (N=42) missing data. The VOSS item with the next highest percentage of missingness was the final item in the *Divine Responsibility* subscale "When we suffer, God does God's best within chosen boundaries" (15.2% missing, N=34 compared to 9.1%, N=28) at Time 1). As before, no other variables calculated at Time 2 had more than 15% missing data.

Lastly, we considered whether or not it would be appropriate to transform variables prior to analyzing them. Using Stata, we assessed the distribution of all variables. Many variables had significant skewness, but analyses indicated that for almost all of them an identity transformation was recommended.

Participants

General demographics. Participants for Study 2 were 74.6% female (N=229) and 24.8% male (N=76). Participant ages ranged from 55 to 97 (M= 74, S.D. = 8.6) and incomes from $9,500 per year to $200,000 per year (M= $44,278, S.D.=$28,771). Regarding marital status, 40.7% (N=125) of participants were married, 8.1% (N=25) were single, 2.3% (N=7) were

cohabitating, 15.3% (N=47) were divorced, and 30.3% (N=93) were widowed. Participants' educational background varied, with 10.7% (N=33) having some high school, 26.1% (N=80) a high school diploma, 19.5% (N=60) had some college or vocational training, 2.3% (N=7) had an associate's degree, 11.7% (N=36) had a bachelor's degree, and 19.2% (N=59) had a graduate degree.

Religious demographics. Detailed information regarding participant religious demographics is presented in Table 8. Of the 307 participants, 44.3% (N=136) identified themselves as Catholic and 28.7% as Protestant (N=88). This high percentage of Christian participants is consistent with national averages for the United States (Pew, 2008). Of the Protestants in this sample, the denomination with the highest percentage of participants was the United Church of Christ (UCC) with 14.3% (N=44). An additional 4.2% (N=13) identified themselves as Episcopal/Anglican and 4.6% (N=14) identified as Methodist.

When religious changes between Time 1 and Time 2 were analyzed, we found that reports of self-ranked spirituality were consistent (T1 M=3.08, SD=.84 vs. T2 M=3.14, SD=.85; $t(204)1.45$, $p=.15$), but self-ranked religiosity was significantly lower at Time 2 (T1 M=3.03, SD=.84 vs. T2 M=2.94, SD=.82; $t(221)$ 2.70, $p=.01$). Interestingly, when perceptions of religious gains and losses during the last three months were assessed using cross-sectional data at Time 2, the opposite effect was reported: 32% (N=69) of participants reported experiencing a gain in their faith while 5.85% (N=12) reported experiencing a loss of faith. Attitudes towards God (ATGS) scores were not significantly different between the two time points.

VOSS scores at Time 1 were generally consistent across gender, with a few exceptions (Table 9). Men had significantly higher scores on *Unorthodox* beliefs (M=2.13, SD= 1.36) than women (M=1.69, SD= 1.10; $t(107)$ 2.56, $p=.01$). Women had higher scores on *Encounter* beliefs

(M=3.77, SD=1.27) than men (M= 3.43, SD=1.20; $t(295)$ 2.08, p=.03) and also endorsed more *Suffering God* beliefs (M=4.00, SD= 1.59) than men (M=3.35, SD= 1.57; $t(292)$ 3.07, p<.00). There were no significant differences in beliefs by any other demographic variables (e.g. age, income, marital status, education). Correlations between VOSS subscales are presented in Table 10.

Participant stress appraisals. Participant responses at Time 2 included identification of the most stressful event experienced since Time 1, a rating of both how stressful it was initially and how stressful it was at present, and how long the stressor had been taking place. Participants reported a wide range of stressors (see Table 11) including airline travel delays, health concerns, relational stress, financial difficulties, national safety concerns (e.g. Boston bombing, school shooting), and personal loss (e.g., death of a spouse). Of these, 31% (N=60) reported the event had occurred within the last month, 29% (N=55) within the last three months, 14% (N=26) within the last year and continued, 8% (N=16) more than one but less than three years ago, 6% (N=11) more than three years ago, and 12% (N=23) said the event had initially occurred more than five years before but continued to be a stressor.

Participant life experiences. Participant life experiences were assessed by using the Life Stressors Checklist-Revised (LSC-R). Table 12 provides an overview of the positive Time 1 responses organized by gender. The mean number of stressors reported by participants at Time 1 was 5.76 (S.D.=3.87), with a range of 0-24. Although it is not a traditional scoring procedure for this instrument, in addition to creating a total sum of life stressors we also summed specifically interpersonal stressors (e.g. physical or sexual abuse, abandonment by attachment figures), since the literature suggests that these trauma may be the most impactful (e.g., Nishith, Mechanic, & Resick, 2000), and that there is a connection between human relationships and individuals'

perceptions of the human/divine relationship (Hill & Hall, 2002). At Time 1, the mean number of interpersonal stressors was .94 (SD=1.58) with a range of 0 to 9.

It should be noted that a data collection error occurred for some of the participants at Time 1 that may mean that the actual number of stressors experienced for some of the males was higher than reported. When response patterns were reviewed mid-way through Time 1 data collection, it was clear that some male participants were confused by the "For Women Only" direction on the question regarding whether or not they had experienced a miscarriage or abortion. Some men apparently responded to that direction by not filling out any items appearing after that question, while others continued with the questionnaire as anticipated. Study personnel clarified directions with subsequent participants and at Time 2, but it is likely that the actual number of male participants who experienced the events listed after the miscarriage/abortion question is higher than measured at Time 1.

Although we included the LSC-R in the Time 2 survey, because of an unexpected response pattern raising significant questions of reliability, we decided not to analyze the Time 2 LSC-R data. The LSC-R was the last measure in the Time 2 study packet and seems likely that was related to participant fatigue, since 43.7% of participants (N=94) reported *fewer* life stressors at Time 2 than they did at Time 1, even though any changes should have been in the positive direction (i.e., more stressors). Given these concerns we decided not to use LSC-R Time 2 data independently or to create change scores, so all analyses reported involving the LSC-R involved only Time 1 data.

Examining the data for possible confounds

Prior to analyzing relationships between the VOSS and our variables of interest, we used ANOVAs and bivariate correlations explore possible overlaps between constructs of interest and

identify possible confounding variables. We also used ANOVAs to assess for relationships between the means of VOSS subscales based on demographic factors. Analyses indicated that there were significant differences based on gender for *Unorthodox*, *Encounter*, and *Suffering God* means such that males had higher *Unorthodox* means ($p<.05$) and females had higher *Encounter* ($p<.05$) and *Suffering God* ($p<.01$) means. Asian participants also tended to have higher *Retribution* means than White participants ($p<.05$).

Next, we looked at the religious variables to determine whether we needed to include all of them in our analyses or whether we could be more selective. As we suspected, many of the religious variables were strongly related. Self-ranked religiousness and spirituality were highly correlated ($r=.59$, $p<.01$), and belief in God was similarly correlated with both self-ranked religiousness ($r=.66$, $p<.01$) and self-ranked spirituality ($r=.50$, $p<.01$). Positive attitudes towards God were correlated with all three (self-ranked religiousness $r=.59$, $p<.01$; self-ranked spirituality $r=.52$, $p<.01$; belief in God $r=.67$, $p<.01$). The only religious variable unrelated to the rest was negative attitudes towards God. Given the strong correlations between religious variables we decided to focus our analyses only on measures of self-reported religiousness (since the beliefs we were measuring are based on religious traditions) and negative attitudes towards God.

Question 1: Are beliefs about suffering related to well-being?

Our first research question centered on whether or not beliefs about suffering were associated with well-being. Given the complex findings in the literature related to religion and well-being we wondered if the effect of beliefs might be mediated by one or more variables. We also thought that it seemed likely that there might also be moderation effects based on the

individual's level of religiosity, such that religious beliefs might be more salient for those who considered themselves religious than those who did not.

In order to identify possible mediating variables, we looked at correlations between well-being variables and our other constructs of interest (optimism, religious variables) (Table 13). We found that optimism was negatively correlated to depression ($p < .05$, $r = -.38$), anxiety ($p < .00$, $r = -.31$), and stress ($p < .05$, $r = -.39$), and was positively correlated with positive states of mind ($p < .05$, $r = -.37$). Negative attitudes towards God were also positively correlated with depression (r=.26, p<.01), anxiety (r=.18, p<.05), and stress (r=.27, p<.01), and were negatively correlated with mental health as measured by SF-12 (r=-.27, p<.05) and positive states of mind (r=-0.23, p<.01).

Next we looked at correlations between the VOSS and well-being (Table 14) and between the VOSS and possible mediators. We did not plan our analyses exclusively around these correlations, however, since significant indirect effects are often initially obscured (MacKinnon & Fairchild, 2009). We found that optimism was negatively correlated to *Unorthodox* (r=-.27, p<.01), *Retribution* (r=-.12, p<.05), and *Limited Knowledge* (r=-.14, p<.05), but positively to *Suffering God* (r=-.13, p<.05) beliefs. We also found that negative attitudes toward God were positively related to *Unorthodox* (r=.34, p<.01), *Retribution* (r=.13, p<.05), and *Limited Knowledge* (r=.16, p<.01) beliefs.

After determining that optimism and negative attitudes towards God should be considered as possible mediators in any analyses, we created a series of structural equation models in Stata. Our models included optimism and negative attitudes towards God as mediators, individual religious self-ranking as a moderating variable, one of the VOSS subscales as an independent variable, and one of the well-being outcomes as the dependent variable

(Figure 2). In order to correct for bias, we used bootstrapping (5000 iterations) to obtain bias-corrected *p* values and Z scores standard errors, and confidence intervals.

Moderated mediation models of beliefs, well-being, and religiosity. In our first set of models, we tested the effects of non-monotheistic beliefs (*Unorthodox, Random, Retribution*) on well-being. We found that for participants who were not or were only moderately religious, *Unorthodox* beliefs (Table 15) had indirect effects mediated mostly by optimism, although negative attitudes towards God were a mediator of mental health. Participants who identified as the most religious appeared to be sometimes buffered from the negative effects of these beliefs, although not always. The only measure of well-being that *Unorthodox* beliefs did not predict was physical health. There were no significant direct or indirect effects for *Random* or *Retribution* beliefs (Table 16), though there was a total effect on positive states of mind in a negative direction (b=-.03, p<0.05).

There was a range of effects for the traditional monotheistic beliefs (Table 16). *Divine Responsibility* and *Limited Knowledge* both had interaction effects but no mediated relationships. *Divine Responsibility* had a direct negative effect on physical health (b=-3.27, p<.05) as well as an interaction with religious self-ranking (b= .98, p< .05; Figure 3). It also had a direct positive relationship with better mental health (b= 2.7, p<.05). None of the *Divine Responsibility* relationships were mediated by optimism or negative attitudes towards God. For *Limited Knowledge* beliefs, there were no indirect effects but the total effects for people with moderate religiosity were significant such that stronger *Limited Knowledge* beliefs were associated with increases in depression (b=.40, p<0.05) and stress (b=.50, p<.05). As with *Divine Responsibility*, there was also an interaction effect with religiosity predicting physical health (Figure 4).

Finally, *Providence* beliefs did not have any direct or indirect effects, but at moderate levels of religiosity there were total effects predicting poorer well-being with higher rates of depression (b=.31 p<.05) and stress (b=.41, p=0.017), with lower mental health (b=-.34, p<.05), and positive states of mind (-.03, p<.05). *Overcoming* beliefs had a direct positive effect on mental health (b= 2.53 p<.05), with no indirect or total effects. *Suffering God* beliefs had a direct positive effect on mental health (b=2.92, p<.05). They also had negative indirect (b=-.46, p<.05), and total (b=-.52, p<.05) effects on stress for those with the strongest levels of religiosity, and positive indirect (b=.03, p<.05) and total (b=.04, p<.05) effect on positive states of mind for those with the highest levels of religiosity. There were no direct, indirect, or total effects for *Encounter* or *Soul-Building* beliefs.

Changes in beliefs and well-being. Before analyzing changes in beliefs we first examined the stability of VOSS means. Using paired t-tests we found that *Unorthodox, Retribution, Providence, Encounter, Overcoming, Suffering God,* and *Soul-Building* beliefs were stable with no significant differences between the means at Time 1 and 2. Of the three beliefs that changed between time points, *Random* (t=1.71, p=0.04) and *Divine Responsibility* (t=12.20, p<.01) beliefs both had significantly lower means at Time 2 while *Limited Knowledge* beliefs (t = -11.76, p<.01) had a significant increases. There were no significant correlations between changes in belief and measures of well-being, coping, attitudes towards God, post-traumatic growth reports, and stress-appraisals after Bonferroni corrections were applied.

Next, we analyzed whether change scores for beliefs about suffering predicted changes in well-being. We found that increases in *Encounter* beliefs Time 1 and Time 2 were also related to increases in stress (b=.90, p=0.01). Increases in *Overcoming* beliefs were also significantly related to decreases in PSOMS scores (b= -.07, p=0.02). In addition to these significant results,

there were two trends: increases in *Suffering God* beliefs coincided with improvements in mental health as measured by the SF-12 (b=.91, p<.06), and increases in *Soul-Building* beliefs were related at the level of a trend to decreases in PSOMS scores (b=-.05 p=0.06).

Cross-lag models. The final longitudinal analyses conducted were cross-lag models examining how beliefs and well-being at Time 1 and Time 2 predicted beliefs and well-being at Time 2 (see Figure 5 for an example). Sixty different models were tested combining the ten VOSS subscales and six well-being outcomes. All the models reached standards of good fit with a CFI >.95 (Hu & Bentler, 1999) and RMSEA>.08 (Browne et al., 1993) many with almost perfect fit indices. When individual relationships were analyzed, however, it was clear that the driving force for the exceptional fit indices were the strong associations between Time 1 and Time 2 relationships between each construct. Most of the relationships between beliefs and well-being at Time 1 and Time 2 were insignificant.

For nine of the models, beliefs or well-being at Time 1 had a significant correlation to the Time 2 responses of the other factor. Depression, anxiety, PSOMS, and physical health at Time 1 were all predictive of beliefs at Time 2 after controlling for Time 1 beliefs. Greater depression at Time 1 predicted more *Retribution* (b =.13, p<.05) and *Overcoming* at T2 (b = .11 p< .05). Higher anxiety at Time 1 predicted more *Retribution* beliefs at T2 (b =.15, p< .05). Lower PSOMS scores at Time 1 predicted stronger *Retribution* (b =-.14, p<.05) and *Limited Knowledge* beliefs at Time 2 (b =-.12, p<.05). Poorer physical health at Time 1 predicted stronger *Encounter* (b =-.15, p<.05) and *Overcoming* (b=-.15, p<.05) beliefs at Time 2.

Some beliefs at Time 1 also predicted well-being at Time 2 after controlling for Time 1 well-being. More *Limited Knowledge* beliefs at Time 1 predicted lower PSOMS at Time 2 (b =-.12, p<.05), while greater *Divine Responsibility* beliefs at Time 1 predicted higher Stress at T2 (b

=.11, $p<.05$). Lastly, stronger *Suffering God* beliefs at Time 1 predicted lower PSOMS at Time 2 (b =-.11, $p<.05$).

Question 2: Life Stressors (LSC-R) & VOSS Predicting Well-Being

Next we analyzed relationships between VOSS subscales and stressful life events as measured by the LSC-R. When an individual's total number of life stressors was summed and correlated with each of the VOSS subscales, there were no significant correlations. When the sum of only interpersonal stressors (i.e., those perpetrated by another person) was considered, a significant negative correlation appeared between the number of interpersonal stressors people had experienced and *Random* beliefs (r=-.12, $p<.05$), indicating that people who had experienced more interpersonal stressors were less likely to believe that suffering occurred randomly.

Next we examined whether the cumulative number of individual life stressors might serve as a moderator in religious beliefs' relationships with well-being. As before, we used structural equation models in which optimism and negative attitudes toward God served as possible mediators, with either total number of life stressors or total number of interpersonal stressors as the moderator variable (Figure 6).

Consistent with all previous analyses, the non-traditional monotheistic beliefs all had negative effects, if any at all. *Unorthodox* beliefs were associated with poorer well-being across multiple analyses both with indirect and total effects (Table 17). Stronger *Unorthodox* beliefs mediated by optimism predicted greater depression, anxiety, and stress. They were also associated with reduced mental health, but mediated by negative attitudes towards God. In this model *Unorthodox* beliefs also had a direct negative effect on positive states of mind. *Random* beliefs had no effects, but for people with the fewest number of stressors *Retribution* beliefs (mediated by optimism) predicted higher rates of depression (Table 18). They were also related

to higher anxiety, stress and decreased positive states of mind for all but people who had experienced the most number of stressors.

Among the traditional monotheistic beliefs a variety of effects emerged when total number of life stressors was a moderator, including several clear predictors of poorer well-being (Table 18). *Limited Knowledge* beliefs were a predictor of higher depression (mediated by optimism for everyone except for those with the most number of life stressors) and stress (mediated by negative attitudes towards God for those with the highest number of life stressors). *Providence* beliefs were related to negative outcomes for those with the least number of life stressors: their total effects were predictive of greater depression and stress, in addition to a negative relationship with mental health that was mediated by negative attitudes toward God. *Encounter* beliefs were also a direct predictor of poorer physical health in this model (b=-1.98, p<.05).

Not all beliefs predicted poorer health with life stressors as a moderator. *Divine Responsibility* had positive relationships with well-being for people who had experienced the most number of stressors, predicting lower depression and anxiety in relationships that were mediated by optimism. *Suffering God* beliefs were also associated with better well-being via optimism: for people who had experienced a moderate number of stressors they predicted lower stress and more positive states of mind. There were no effects for *Overcoming* beliefs.

For *Soul-Building* beliefs, the relationships were complex with both a direct negative effect on positive states of mind (b=-0.14, p<.01), and an interaction effect. We found that although for individuals with a low number of life stressors having low *Soul-Building* beliefs was associated with more positive states of mind, as the number of stressors increased Soul-Building beliefs were associated with more stable well-being (Figure 7).

For our last set of analyses related to life stressors, we examined the effects of belief on well-being, with the total number of interpersonal stressors (e.g. abuse perpetrated by another person, interpersonal stressors such as divorce), a subset of the total stressors that we thought might be more potent and have a slightly different profile of results. Results of these analyses are presented in Tables 19 and 20 and are generally consistent with the first set of life stressor analyses, but with a few exceptions.

Unorthodox beliefs mirrored the earlier results of the analyses where total life stressors was the moderator – they were related to higher rates of depression, anxiety, stress, and fewer positive states of mind (via optimism), and lower mental health scores (via negative attitudes toward God) for everyone except those with the fewest number of interpersonal stressors (Table 19). As before, there were no effects for *Random* beliefs.

Unlike with the previous analyses, *Retribution* beliefs were only related to increased anxiety and stress for those with moderate numbers of interpersonal stressors (Table 20). In addition, there was an interaction effect: at low levels of interpersonal stressors *Retribution* beliefs were associated with better mental health, but for those with the highest number of interpersonal life stressors there was a dramatic difference such that having strong *Retribution* beliefs was strongly associated with much lower mental health scores (Figure 8).

As before, *Divine Responsibility* and *Suffering God* had positive effects (Table 20). *Divine Responsibility* was associated with lower rates of depression (mediated by optimism for those who had experienced the most interpersonal stressors). *Suffering God* beliefs were also associated with lower stress levels, mediated by optimism (b=-.27, p<.05).

Finally, as before, *Limited Knowledge, Providence*, and *Encounter* beliefs all had negative relationships with well-being that mirrored the earlier relationships found (Table 20).

One exception to this was an interaction between *Encounter* beliefs and interpersonal stressors that predicted mental health. At low levels of interpersonal stressors it was better for people to have fewer *Encounter* beliefs, but at high levels of interpersonal stressors *Encounter* beliefs were a strength (Figure 9). *Soul-Building* beliefs had a negative relationship with positive states of mind (b= -.07, p<.05), but no interaction effects as there were with the total number of life stressors. *Overcoming* did not have any significant relationships with well-being.

Question 3: Beliefs and subjective appraisals of stress and growth

Beliefs and perceptions of stressors. Our third broad research question was whether participants beliefs' related to how they responded to stressors including their perceptions of the stressor, reported coping efforts, and perceived growth. To begin, we turned to the question of whether beliefs about suffering were related to stress appraisals. At Time 2, we asked participants to identify the most stressful event they had experienced since Time 1 and then rate both how stressful it was initially and how stressful it was at present (Table 21). We also asked participants to identify how long the event had been happening in order to differentiate between acute and chronic stressors. We analyzed the data to see if there were significant relationships between beliefs and reports of initial or current stress appraisals.

In terms of initial stress appraisals, individuals with strong *Random* beliefs at Time 1 were more likely to report higher initial stress appraisals (b=-.13, p=.03). Although the relationship did not reach significance, individuals with stronger *Suffering God* beliefs also had a trend to significance in the same direction (b =.10, p=0.07) When it came to predicting how people would rate their current experience of the stressor, none of the beliefs at Time 1 were significant but several beliefs from Time 2 were: analyses of cross-sectional data from Time 2 showed that people with stronger *Suffering God* beliefs rated their current experience as more

stressful than those lower Suffering God beliefs (b =.16, p= 0.01). A trend emerged such that people with stronger *Overcoming* beliefs also reported experiencing more stress (b=.14, p=.05).

Well-being at Time 2 was also predicted by some interactions between individuals' beliefs and their reports of how stressful their intervening stressful event was currently. Participants who appraised the event as very stressful had higher stress levels if they also had strong *Retribution* beliefs ($F(4,153) = 37.76$, $p<.01$; Figure 10). Similarly, participants reporting very stressful events had much lower PSOMS scores if they had strong *Unorthodox* beliefs ($F(4,184) = 37.04$, $p<.01$; Figure 11). In contrast, strong *Encounter* beliefs predicted resiliency when paired with higher stress appraisals; at low stress appraisal levels *Encounter* beliefs were associated with the lowest PSOMS scores, but as individuals appraised their events as increasingly stressful, *Encounter* beliefs were associated with better mental health ($F(4,185) = 35.73$, $p<.01$; Figure 12).

Coping strategies and perceptions of growth. Some specific styles of coping were also related to changes in VOSS scores. Regression analyses showed that increases in *Divine Responsibility* (b= -.10, $p < .01$) *Providence* (b=-.12, $p <.05$), and *Overcoming* beliefs (b=-.13, $p<.05$) all coincided with less positive religious coping as measured by the RCOPE. There was also a trend such that increases in *Suffering God* beliefs were also associated with lower levels of positive religious coping (b=-.10, $p<.05$). More generally, increases in *Providence* beliefs were related to lower levels of religious coping as measured by the Brief COPE (b=-.15, $p<.05$).

Changes in VOSS beliefs were also associated with specific non-religious coping efforts. Lower levels of self-distraction were associated with increases in *Random* or *Encounter* beliefs (both b=-.10, p<.05). Greater active coping was associated with increases in *Divine Responsibility* beliefs (b=.12, p<.05) and reductions in *Suffering God* beliefs (b=-.12, $p<.05$).

More reported use of denial as a coping strategy was related to decreases in *Providence* (*b*=-.11, p<.01) and *Suffering God* (*b*=-.12, p<.01) beliefs. Increases in *Overcoming* beliefs were associated with more use of substances to cope with the stressor (*b*=.07, p<.*01*), and there was a trend such that decreases in *Encounter* beliefs were associated with more venting (*b*=-.08, *p*=.05). Finally, participants who reported decreases in *Encounter* beliefs were more likely to engage in self-blame (*b*=-.08, *p*<.05), whereas individuals whose *Divine Responsibility* beliefs increased were more likely to engage in accepting coping strategies (*b*=.13, *p*<.05).

Beliefs also predicted perceptions of growth from stressful experiences. Participants with stronger *Random* beliefs at Time 1 reported lower levels of perceived growth from their stressful experience (*b*=-.16; *p*<.05) at Time 2. In contrast, higher reports of growth appeared among those with stronger *Divine Responsibility* (*b*=.30, *p*<.01), *Providence* (*b*=.24, *p*<.01), *Encounter* (*b*=.25; *p*<.01), *Overcoming* (*b*=.35, *p*<.01), *Suffering God* (*b*=.28, *p*<.01), and *Soul-Building* (*b*=.19, *p*<.01) beliefs at Time 1. Finally, when changes in beliefs were reviewed, we found that reports of growth from stressors were negatively related to increases in *Retribution* (*b*=-.19, *p*<.05) and *Providence* (*b*=-.18, *p*<.05) beliefs.

Study 2 Discussion

Study 2 examined relationships between beliefs and well-being, looking at three broad questions. First, are beliefs related to well-being? We wondered if those relationships would be direct or mediated by other factors, and if an individual's level of religiosity might influence those relationships. Second, we hoped to discover if participants' life experiences influence the way that their beliefs and well-being are connected? Third, we wondered if beliefs influence the way that people perceive stressors and how they respond to them?

In response to our first question, beliefs did relate to well-being in a variety of ways, both cross-sectionally and over time, but not all of them were significant. Using structural equation modeling, we found that some beliefs showed direct effects apart from optimism or negative attitudes towards God, others interacted with level of religiosity, and still others had total effects in which individual contributors could not be isolated. An exhaustive discussion of each significant result would be both overwhelming given the quantity of results and unhelpful given the exploratory nature of this research, so in the interest of clarity we will focus this discussion on a few essential findings.

First, this research suggests that some beliefs are indeed consistently related to poorer levels of well-being, others are related to better health, and three had only a few relationships to health at all. *Unorthodox, Retribution*, *Limited Knowledge*, and *Providence* beliefs were all consistent predictors of higher depression, anxiety, and stress alongside lower levels of mental health and fewer positive states of mind. *Suffering God* beliefs were almost always related to greater well-being, but there were some apparent contradictions to this in the longitudinal data where *Suffering God* beliefs predicted reduced well-being at Time 2. *Random*, *Overcoming*, and *Soul-Building* beliefs were the least related to well-being, with only a few significant relationships across the whole study.

In addition to discovering that beliefs are indeed related to well-being in many instances, we also found that the most common mechanism for that relationship was optimism. Negative attitudes towards God were also a mediator of some effects, but to a much lesser extent. In terms of moderators, we found that the extent to which a person considers himself or herself religious will often have an impact on whether or not a belief relates to well-being. In many cases, being very religious was an indirect protective factor (e.g., mitigating the effects of *Unorthodox*

beliefs), and other times it was an essential part of the belief's positive relationship (e.g. *Suffering God* beliefs). Many of the significant results included both indirect and total effects, the latter indicating that the relationships were too complex to be teased apart with these analyses.

A third key finding related to the above findings is that, in general, beliefs are related to psychological rather than physical health. This is somewhat surprising given the significant literature on relationships between religion and health, but it may be that there is an entirely different mechanism through which those other studies found the relationships between religion and health which operates apart from the cognitive content of beliefs. Although a few relationships with physical health emerged out of the structural equation models, they were rare exceptions among the 120 models examined; the vast majority of findings related to measures of psychological distress.

A fourth important finding is that, in general, our data supported previous research suggesting that beliefs for older adults are generally stable (e.g., (Hamberg, 1991), but with a few exceptions (e.g. *Limited Knowledge*). Further research will be needed to determine whether the changes reported in this sample are a function of the beliefs themselves or if it is an issue related to measurement. It should be noted that although the initial reliability data for the VOSS appears sound, it is still a new instrument and thus this unexpected finding may be a reflection of an unknown weakness of those particular subscales. Analyses did not confirm specific reasons behind the changes so we do not know the mechanisms or reasons behind the change, only that they are relatively rare.

Fifth, and perhaps most important, this research suggests that the relationships between beliefs and well-being are nuanced and contextualized. The interactions that appeared with the

various moderators (religiousness, total number of life stressors, interpersonal stressors) provided a glimpse into the possibility that given the right context some beliefs can be either a liability (e.g. *Retribution* beliefs paired with a high number of interpersonal stressors) and others may be a buffer against potential increases in distress (e.g. *Soul-Building* beliefs paired with a higher total number of life stressors).

For our final research question, we explored the question of whether beliefs were related to how older adults responded to stressors, including stress appraisals and perceptions of post-traumatic growth. As with our previous two research questions, the answer is a resounding "Yes!" Beliefs are indeed related to perceptions of stress and growth, often in surprising ways.

Our findings regarding perceptions of stress included unexpected and expected results, following our previous analyses. In terms of the surprises, *Suffering God* beliefs – which consistently predicted greater well-being cross-sectionally in our structural equation models – were associated with reports of higher perceptions of stress (along with *Overcoming* and *Random* beliefs, neither of which predicted much else in other analyses). Other results were more expected, such as the association between *Unorthodox* and *Retribution* beliefs and perceptions of greater stress, a result consistent with our earlier findings regarding negative relationships between these beliefs and well-being measures.

Interestingly, some of the coping strategies associated with increases or decreases in specific beliefs appear to have direct ties to some aspect of the theology associated with those beliefs. The higher levels of active coping corresponding to increases in *Divine Responsibility* beliefs could be a reflection of a theology in which humans expect to encounter suffering as a matter of course, and the lower reports of personal growth corresponding to increases in *Retribution* and *Providence* beliefs could be understood within the framework of two sets of

beliefs in which the role of the individual in each moment is secondary to other factors (e.g. karma, God's control over details of life). More research is required to see if these relationships are consistent –there are some results which do not appear to be connected to beliefs in a logical way – but they raise the possibility that these may be connections to be explored.

Strengths, Limitations, and Future Research

This study has several strengths. It is one of few longitudinal studies on religious beliefs, allowing us to run a range of sophisticated analyses incorporating both cross-sectional and longitudinal data. The study's religious measures are another strength as well, since they are both theologically coherent and attempt to access constructs that are clinically relevant. The sample, while certainly not as large as some national studies, has more than adequate power and size for the statistical techniques used and the life experiences represented include a wide range of life stressors.

This study also has several limitations. First and most importantly, this is a narrow sample in terms of participant age, race, and geographical location. We will need many more studies from other samples of college students, young adults, middle-aged adults, and other older adult samples that vary by race and geographic location to determine if the relationships we found are generally consistent or specific to certain populations. Second, although we were able to identify two mediators of the religious beliefs-well-being relationships it is very likely that there are other factors which we did not measure that may be equally important to understanding those relationships.

Third, as an exploratory study these results should be considered with care. Although some of the results were consistent (e.g., *Unorthodox* beliefs were repeatedly positively related to depression, anxiety and stress) there is always the possibility, in spite of our conservative

statistical techniques, that some of the results are spurious. Rather than being taken as having established the relationships between religious beliefs about suffering and well-being, these results should be taken as the start of what should become an ongoing line of research contributed to by many different scholars. That *some* religious beliefs about suffering relate to well-being in powerful ways seems clear, but the details of those relationships remain to be confirmed and understood in a more substantial way.

Much remains to be done with future research. Although quantitative work is essential for statistical power and generalizability, at least initially some of this research should be qualitative to determine where the most fruitful lines of research will lie. In particular, learning where people obtain or develop their beliefs, the factors that influence them, and how aware of and able to articulate their beliefs people are all important questions that should be addressed qualitatively.

In addition, future research should consider what other factors may serve as mediators and moderators of these relationships and incorporate them into the study design. Future research should consider the contributory roles of education and specific life experiences (not just number of total stressors or interpersonal stressors), and how religious communities may shape and maintain beliefs. We also need more prospective studies that can examine whether changes in beliefs are connected to specific life events. More work should also be done on teasing apart the differences between beliefs and attitudes towards God, to determine how much of the research on each topic may be applicable to others, to see whether they function differently or are in fact largely synonymous.

This research raises far more questions than it answers. Some of the results were unsurprising (e.g. *Unorthodox* beliefs' consistently negative relationships with well-being,

reflecting as they do an inherently pessimistic view of the world and religion), while others were confusing, (e.g. why *Suffering God* beliefs were related to positive well-being in every cross-sectional analyses, but associated with increased perceptions of stress and with greater distress longitudinally).

One of the questions this research leaves us with is whether beliefs play a causal role in distress, are simply activated as an available resource during times of distress, or if they are created by the distress itself. In other words, do beliefs contribute to changes in well-being, or are they a by-product? For example, did increasing *Encounter*, *Overcoming*, and *Soul-Building* beliefs actually leave people more vulnerable to distress, or were they a marker of some other process? Is it possible that some beliefs simply become more salient as a resource as people's distress increases, or do they contribute to the distress itself? In the case of "positive" beliefs like *Suffering God* beliefs, do they actually improve some individuals' mental health, or are beliefs in a God that cares for and compassionately suffers simply reflective of a "healthier" perspective on the world, perhaps greater openness to spiritual resources?

One puzzling finding was that most of the results found related to negative rather than positive relationships to mental health. Although there were a some positive relationships (i.e. most of the *Suffering God* cross-sectional results), the most consistent findings were that *Unorthodox*, *Retribution*, *Limited Knowledge*, and *Providence* beliefs were related to poorer well-being. We wondered whether this was a function of the fact that we happened to be measuring these specific beliefs, whether it was related to our choice of well-being measures that were simply more sensitive to distress, whether it is a function of our admittedly narrow sample of senior citizens in New England, or whether this was a reflection of some broader truth regarding religious beliefs being bad for people.

General Discussion

Together, these studies add substantially to the literature on religious beliefs about suffering and well-being, confirming not only that we can measure beliefs about suffering but that it is important to do so. In Study 1 we found that the VOSS retained its strong psychometrics in a large multi-religious American sample. The factor structure replicated that found in previous research and it demonstrated excellent reliability and validity, including expected relationships to related religious constructs. This data replicated the measure's initial findings in a university student sample, suggesting that the VOSS has utility as a measure of religious beliefs in broader samples as well.

One result of note from Study 1 is that although the VOSS showed that beliefs differed among broad religious traditions (e.g. Atheists vs. Catholics), based on this research it appears that denomination is *not* a valid proxy for beliefs, or at least not beliefs about suffering. This data suggests that researchers should not make assumptions about the content of beliefs based on denominational affiliation. Just because an individual is Presbyterian does not mean that he or she endorses Calvinistic beliefs regarding providence, just as being a Pentecostal does not imply belief in a "health and wealth gospel."

In Study 2, we found a large number of very complex relationships between beliefs about suffering and well-being. Beliefs' relationships to well-being were often moderated by an individual's level of religiousness or by how many stressful events they had. These relationships were often mediated by optimism, negative attitudes towards God, or both. Beliefs about suffering were also closely tied to how people responded to stressors, both their perceptions of stress and growth, and their perceived coping responses. Most often beliefs predicted decreases of psychological, not physical well-being.

Although the results of both these studies represent an important contribution to the literature, more than anything they point towards the research that remains to be done. Although the VOSS appears to function well in an American sample we do not know if it would be as strong psychometrically in other international settings. Indeed, it seems likely that the *Retribution* subscale in particular would need to be adjusted to incorporate more nuanced views of retribution beliefs found in Asia, just as the current version of the VOSS was designed to access nuances within Christianity in a North American setting. Hindus in India and Buddhists in Thailand almost certainly have a different religious framework than many self-identified Hindus and Buddhists in the United States, so there may need to be subscales within the VOSS that are dropped or new ones developed for research in other samples.

Additionally, much more work remains to elucidate our understanding of how beliefs interact with well-being. The relationships found in our narrow sample of senior citizens in New England must not be assumed to be the same as those that might be present among college students on the West Coast, patients with cancer or chronic illnesses, veterans, minorities struggling against racism, or farmers in the Midwest. We now have an initial framework in which to develop hypotheses, but the work of confirming them and developing better, more accurate theories remains.

Finally, these studies point towards need for research on the clinical implications of specific beliefs about suffering. Much has been written regarding the integration of spirituality into therapy, but it remains to be seen whether or not religious beliefs about suffering are indeed a construct with clinical utility, and what that might look like. Determining this will require coordination of clinicians and scholars. Far from being the last word on religious beliefs about

suffering, these are two of the first of what will hopefully be many studies researching beliefs and well-being.

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Table 1. VOSS subscale origins and sample items

Subscale	This belief describes participants who…	Scale Items
Unorthodox	… believe in God/a higher power, but not divine omnipotence or omnibenevolence	▪ God could prevent evil and/or suffering from happening, but God chooses not to because God isn't entirely good. ▪ God allows suffering because God is not all-loving. ▪ We know that God is not all-good because there is suffering in the world.
Random	... think suffering happens randomly, without divine involvement or human control	▪ No one knows why bad things happen to good people; it's all pretty random. ▪ Suffering happens randomly, not because of anything people have done wrong. ▪ Suffering just happens without purpose or underlying reason.
Retribution	… think individuals get what they deserve, believe in karma	▪ Individuals suffer because of their deeds in the past. ▪ Karma is the best explanation for individuals' suffering. ▪ Individuals experience suffering as a result of their past wrongdoing.
Divine Responsibility	… ascribe to Augustinian theology or Islamic perspective in which suffering is a reflection of human sin vs. God's power or goodness	▪ God is all-powerful and can change situations to alleviate suffering. ▪ When we suffer, God does God's best within chosen boundaries. ▪ God is all-good and all-powerful, but God is not obligated to relieve suffering.
Limited Knowledge	… ascribe to an Open Theist theology in which God is seen as good and omnipotent but chooses to limit knowledge about the future	▪ The main obstacle to God preventing suffering is that God doesn't know when it will happen. ▪ God cares about people who are suffering, but can't protect them because God doesn't know in advance □what will happen. ▪ The main impediment to God protecting people from suffering is that God doesn't know when or how it □will happen.
Providence	… believe that God exerts control and plans for every detail of individuals' lives.	▪ Everything that we experience – including suffering – is planned in detail by God. ▪ We shouldn't resist suffering because God has planned every detail of our experiences – even the bad ones. ▪ There's no need to strive against suffering because God will ultimately control everything we experience.
Overcoming	… ascribe to a "Health & Wealth" or "Prosperity Gospel" in which obedience to God always results in success, prosperity, and freedom from suffering	▪ By praying and having faith we can take control over suffering. ▪ God will stop our suffering if we pray and have faith. ▪ People can stop or get out of their experiences of suffering by praying.
Encounter	… believe that the process of dealing with suffering is more important than the reason for it	▪ The most important thing when we experience hard things is to keep asking God questions, even if we don't understand the answers. ▪ The most important thing to remember about human suffering is that God is above and beyond it all; we might never get answers to our questions. ▪ Suffering is a way to encounter a God who is above and beyond human experience and comprehension.
Suffering God	…believe that God is both good and suffers with people	▪ When we suffer, God is suffering along with us. ▪ We know God is good in the midst of pain because God suffers with us. ▪ God's primary role when we encounter suffering is to experience it with us.
Soul-Building	…believe that suffering is a way to build human character and become spiritually stronger	▪ Suffering is intended by God to be a source of personal growth. ▪ We suffer because God wants us to become a better people through experiencing hard things. ▪ God intends suffering to be a catalyst for growth.

Table 2. Study 1 Descriptive Statistics of Demographic Variables by World Religions

		Atheist/ Agnostic N= 111	Jewish N = 85	Muslim N = 95	Hindu N = 95	Buddhist N = 98	Catholic N = 226	Protestant N = 259
Gender %	Male	48	55	67	60	57	48	34
	Female	52	45	33	40	43	52	66
Age %	18-24	28	27	36	39	38	29	19
	25-34	40	40	49	41	37	36	34
	35-44	14	16	8	14	11	14	21
	45-54	12	6	6	2	10	13	15
	55-64	6	7	0	2	2	7	10
	64+	0	2	0	1	2	0	1
Ethnic/Racial %	American Indian/ Alaska Native	1	4	3	12	2	2	0
	Asian	7	4	27	39	32	5	4
	Black/African American	5	1	11	2	0	6	12
	Hispanic or Latino	7	2	2	1	3	9	3
	Native Hawaiian/ Pacific Islander	0	6	1	0	0	1	1
	White non-Hispanic	77	72	38	28	58	75	78
	Biracial/ Other	3	12	18	18	5	2	2
Geographic Region %	South	29	25	40	28	32	33	45
	Midwest	20	8	23	17	17	16	24
	Northeast	19	31	19	27	18	31	12
	West Coast	24	20	14	24	24	16	14
	Southwest	8	16	5	3	8	4	5
Income %	$10k or less	8	4	7	5	12	4	7
	$10,001 - $20k	15	8	12	4	10	9	9
	$20,001 - $30k	27	14	15	18	18	14	17
	$40,001 - $50k	15	13	16	19	13	23	21
	$50,000 -$70k	14	21	20	25	25	17	16
	$70,001 - $100k	11	20	16	16	13	15	20
	$100,000 <	10	20	15	12	8	17	10
Education %	Some High School	3	1	4	0	2	1	2
	High School Degree	5	5	15	9	3	9	15
	Some College	50	28	27	21	38	36	32
	College Degree	37	38	34	39	38	39	35
	Graduate Degree	5	28	20	31	20	15	17

Table 3. Study 1 Descriptive Statistics of Religious Variables by World Religions

		Atheist/ Agnostic N=111	Jewish N=85	Muslim N=95	Hindu N=95	Buddhist N=98	Catholic N=226	Protestant N=259
Religious Self-Ranking %	Not at all	89	21	5	5	13	9	8
	Slightly	9	40	17	31	39	35	25
	Moderately	2	19	47	45	40	42	48
	Very	0	20	31	19	8	14	19
Spiritual Self-Ranking %	Not at all	45	11	3	1	3	4	1
	Slightly	31	33	16	21	14	26	17
	Moderately	12	33	44	40	46	41	38
	Very	13	24	38	38	37	28	44
Belief about God %	I don't believe in a personal God or in a higher power	42	11	0	1	14	0	0
	I don't know if there is a personal God or a higher power of some kind, and I don't know if I ever will	28	13	2	3	15	9	2
	I don't know if there is a personal God, but I do believe in a higher power of some kind	17	27	11	27	43	14	9
	Although I sometimes question His existence, I do believe in God and believe He knows of me as a person	8	12	20	19	10	34	26
	I am sure God really exists and that He is active in my life.	5	38	67	49	17	42	63

Table 4. Study 1 Descriptive Statistics for All VOSS Subscales

	Mean± (S.D.)	**Response Range**	**S.E.**	**Cronbach's α**
Unorthodox	6.01 ± (3.65)	3-18	0.12	.83
Random	10.53 ± (4.03)	3-18	0.13	.81
Retribution	9.14 ± (4.04)	3-18	0.13	.82
Divine Responsibility	11 ± (4.07)	3-18	0.13	.72
Limited Knowledge	6.25 ± (3.58)	3-18	0.11	.85
Encounter	11.11 ± (4.11)	3-18	0.13	.73
Providence	9.43 ± (4.53)	3-18	0.14	.87
Overcoming	9.83 ± (4.28)	3-18	0.14	.87
Suffering God	10.44 ± (4.77)	3-18	0.15	.90
Soul-Building	11.27± (4.51)	3-18	0.14	.91

Note. S.D. = Standard Deviation, S.E. = Standard Error;

Table 5. Study 1 VOSS Means by World Religion

	Religion	Mean	S.D.		Religion	Mean	S.D.
Unorthodox	Atheist/Agnostic	6.33	4.146	Encounter	Atheist/Agnostic	6.28	3.814
	Jewish	6.72	3.909		Jewish	10.30	4.226
	Muslim	6.25	3.422		Muslim	12.31	3.466
	Hindu	7.23	3.533		Hindu	12.21	3.372
	Buddhist	6.93	3.846		Buddhist	8.94	4.230
	Catholic	5.78	3.624		Catholic	12.07	3.584
	Protestant	4.69	2.701		Protestant	12.55	3.033
Random	Atheist/Agnostic	13.78	3.726	Providence	Atheist/Agnostic	4.99	3.136
	Jewish	11.66	4.003		Jewish	8.22	4.768
	Muslim	9.16	3.870		Muslim	11.30	4.524
	Hindu	9.63	3.509		Hindu	10.79	3.927
	Buddhist	10.01	3.794		Buddhist	7.35	4.010
	Catholic	10.45	3.899		Catholic	10.02	4.077
	Protestant	9.92	3.849		Protestant	10.65	4.316
Retribution	Atheist/Agnostic	7.80	4.025	Overcoming	Atheist/Agnostic	5.11	3.318
	Jewish	8.70	3.874		Jewish	8.71	4.605
	Muslim	9.42	3.741		Muslim	11.81	4.005
	Hindu	12.72	3.458		Hindu	11.60	3.810
	Buddhist	12.14	3.866		Buddhist	8.15	3.895
	Catholic	8.18	3.342		Catholic	10.29	3.700
	Protestant	7.97	3.619		Protestant	10.97	3.738
Divine	Atheist/Agnostic	6.08	3.802	Suffering God	Atheist/Agnostic	5.22	3.464
Responsibility	Jewish	9.99	4.570		Jewish	8.61	4.918
	Muslim	12.21	3.139		Muslim	11.08	4.739
	Hindu	12.02	3.198		Hindu	11.69	4.055
	Buddhist	8.28	4.081		Buddhist	7.93	4.347
	Catholic	11.70	3.364		Catholic	11.45	4.227
	Protestant	12.87	2.963		Protestant	12.63	3.853
Limited	Atheist/Agnostic	4.87	2.876	Soul-Building	Atheist/Agnostic	6.50	4.286
Knowledge	Jewish	6.56	3.637		Jewish	10.25	5.105
	Muslim	6.69	3.363		Muslim	12.36	4.004
	Hindu	8.25	3.897		Hindu	12.31	3.587
	Buddhist	6.75	3.776		Buddhist	9.54	4.835
	Catholic	6.23	3.498		Catholic	12.17	3.835
	Protestant	5.62	3.425		Protestant	12.71	3.622

Table 6. Study 1 Correlations between individual VOSS subscales

	1	2	3	4	5	6	7	8	9	10
1. Unorthodox	1									
2. Random	.21**	1								
3. Retribution	.16**	-.23**	1							
4. Divine Responsibility	-.17**	-.34**	.08**	1						
5. Limited Knowledge	.39**	.16**	.17**	.13**	1					
6. Encounter	-.07*	-.24**	.08*	.71**	.21**	1				
7. Providence	-.09**	-.34**	.13**	.66**	.09**	.63**	1			
8. Overcoming	-.16**	-.35**	.22**	.63**	.12**	.61**	.61**	1		
9. Suffering God	-.22**	-.24**	.03	.70**	.17**	.67**	.59**	.62**	1	
10. Soul-Building	-.13**	-.37**	.18**	.68**	.14**	.73**	.73**	.64**	.65**	1

Note. *Correlation is significant at the $p<.05$ level (2-tailed). **Correlation is significant at the $p<.01$ level (2-tailed).

Table 7. Correlations between individual VOSS subscales and validation measures

	Christian Orthodoxy	GIS Benevolent	GIS Providence	GIS Challenge	WAS Justice	WAS Randomness	WAS Luck	WAS Self-Controllability
Unorthodox	-.34**	-.47**	-.30**	-.38**	.04	.27**	.07*	-.11**
Random	-.32**	-.20**	-.43**	-.36**	-.13**	.68**	.10**	.10**
Retribution	-.13**	-.08*	-.01	-.01	.44**	-.10**	.10**	.00
Divine Responsibility	.68**	.46**	.61**	.63**	.15**	-.32**	.05	.11**
Limited Knowledge	-.03	-.15**	-.06	-.08*	.16**	.23**	.10**	-.04
Encounter	.59**	.44**	.54**	.63**	.13**	-.25**	.09**	.12**
Providence	.53**	.28**	.66**	.50**	.20**	-.35**	.02	.06
Overcoming	.54**	.35**	.63**	.52**	.31**	-.36**	.09**	.08**
Suffering God	.65**	.53**	.63**	.65**	.11**	-.28**	.06	.07*
Soul Building	.56**	.46**	.58**	.67**	.20**	-.34**	.05	.08**

Note. *Correlation is significant at the $p<.05$ level (2-tailed). **Correlation is significant at the $p<.01$ level (2-tailed). Christian Orthodoxy = Christian Orthodoxy Scale (Short Form); GIS = God Image Scales; WAS = World Assumptions Scale;

Figure 1. Study 1 Religious Denominational Groupings

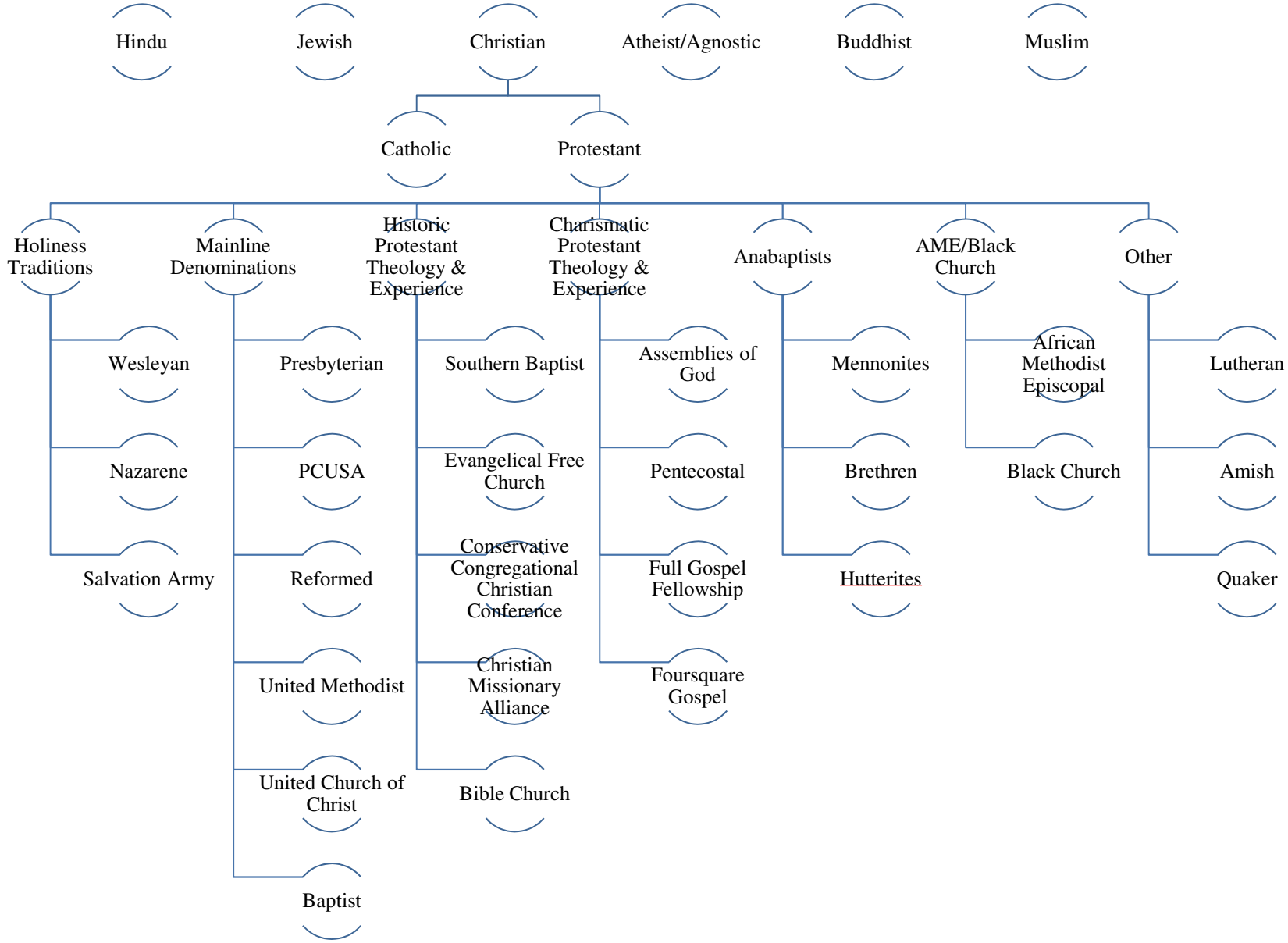

Table 8. Study 2 Descriptive Statistics of Religious Variables by World Religions

		Atheist/ Agnostic 5.5% (N=17)	**Jewish 4.2% (N=13)**	**Hindu .3% (N=1)**	**Buddhist 1% (N=3)**	**Catholic 44.3% (N=136)**	**Protestant 28.7% (N=88)**	**Other 10.7% (N=33)**
Religious Self-Ranking at Time 1	Not	70.6% (N=12)	15.4% (N=2)	---	66.7% (N=2)	1.5% (N=2)	3.5% (N=3)	6.1% (N=2)
	Slightly	17.6% (N=3)	30.8% (N=4)	---	---	8.9% (N=12)	18.6% (N=16)	15.2% (N=5)
	Moderately	5.9% (N=1)	53.8% (N=7)	100% (N=1)	33.3% (N=1)	51.9% (N=70)	46.5% (N=40)	57.6% (N=19)
	Very	5.9% (N=1)	---	---	---	37.8% (N=51)	31.4% (N=27)	21.2% (N=7)
Spiritual Self-Ranking at Time 1	Not	29.4% (N=5)	---	---	---	1.5% (N=2)	10% (N=5)	---
	Slightly	29.4% (N=5)	25% (N=3)	100% (N=1)	---	18.5% (N=24)	20% (N=16)	10% (N=2)
	Moderately	23.5% (N=4)	66.7% (N=8)	---	66.7% (N=2)	40% (N=52)	35.6% (N=31)	40% (N=14)
	Very	17.6% (N=3)	8.3% (N=1)	---	33.3% (N=1)	40% (N=52)	40.2% (N=35)	50% (N=16)
Belief in God at Time 1	I don't believe in a personal God or in a higher power.	29.4% (N=5)	---	---	---	0.8% (N=1)	1.2% (N=1)	---
	I don't know if there is a personal God or a higher power of some kind, and I do	23.5% (N=4)	7.7% (N=1)	---	---	1.6% (N=2)	3.6% (N=3)	3.1% (N=1)
	I don't know if there is a personal God, but I do believe in a higher power of s	29.4% (N=5)	46.2% (N=6)	---	100% (N=3)	6.3% (N=8)	22.6% (N=19)	18.8% (N=6)
	Although I sometimes question His existence, I do believe in God and believe He	---	15.4% (N=2)	---	---	22% (N=28)	25% (N=21)	21.9% (N=7)
	I am sure God exists and that He is active in my life.	17.6% (N=3)	30.8% (N=4)	---	---	69.3% (N=88)	47.6% (N=40)	56.2% (N=18)

Table 9. Study 2 VOSS Means Grouped by Gender

	Male M (SD)	Female M (SD)	Combined M (SD)
Unorthodox *	2.14 (1.36)	1.69 (1.11)	1.81(1.19)
Random	3.93(1.46)	4.16(1.38)	4.10(1.40)
Retribution	2.48(1.41)	2.28(1.33)	2.35(1.37)
Divine Response	3.45(1.30)	3.76(1.36)	3.70(1.35)
Limited Knowledge	2.54(1.31)	2.31(1.35)	2.38(1.35)
Encounter *	3.43(1.21)	3.77(1.27)	3.69(1.28)
Providence	2.53(1.30)	2.84(1.58)	2.79(1.54)
Overcoming	3.25(1.44)	3.58(1.35)	3.50(1.38)
Suffering God **	3.35(1.57)	4.00(1.59)	3.85(1.61)
Soul Building	2.94(1.49)	2.93(1.43)	2.94(1.45)

Note. *Difference is significant at the $p<.05$ level (2-tailed).
**Difference is significant at the $p<.01$ level (2-tailed).

Table 10. Study 2 Correlations between individual VOSS subscales

	1	2	3	4	5	6	7	8	9	10
1. Unorthodox	1									
2. Random	.10	1								
3. Retribution	.30**	-.11	1							
4. Divine Responsibility	.01	.04	.16**	1						
5. Limited Knowledge	.42**	.20**	.33**	.12*	1					
6. Encounter	.09	.09	.11	.51**	.21**	1				
7. Providence	.20**	-.10	.27**	.53**	.12*	.37**	1			
8. Overcoming	-.03	-.09	.14*	.48**	.12*	.43**	.34**	1		
9. Suffering God	-.01	-.10	.09	.56**	.12*	.44**	.45**	.50**	1	
10. Soul-Building	.17**	-.14*	.39**	.53**	.23**	.41**	.62**	.42**	.44**	1

Note. *Correlation is significant at the $p<.05$ level (2-tailed). **Correlation is significant at the $p<.01$ level (2-tailed)

Table 11. Reports of stressful events between Times 1 & 2

Type of Stressor	% (N)
Dealing with Change	5% (N=10)
Death/Loss	8% (N=18)
Financial Concerns	5% (N=10)
Health Concerns	19% (N=42)
Health Concerns of Friends/Family	9% (N=21)
Logistics of daily living/traveling	14% (N=32)
Relational concerns	17% (N=38)
World events	1% (N=2)

Table 12. Time 1 Life Stressors Checklist-Revised (LSC-R) responses by gender

	Male (N=76)	Female (N=229)	Total (N=307)
Been in serious disaster	28	69	97
Seen serious accident	41	81	122
Been in serious accident	29	65	94
Close family member sent to jail	14	57	71
Self sent to jail	7	4	11
Put in foster care or up for adoption	4	6	10
Parents separate/divorce while living with them	8	29	37
Self separated or divorced	25	72	97
Serious money problems	17	39	56
Serious physical or mental illness	29	69	98
Emotionally abused or neglected	9	42	51
Physically neglected	1	12	13
Abortion or miscarriage*	0	56	56
Separated from child against will	3	9	12
Child with severe physical or mental handicap	6	23	29
Caretaker for person with severe physical/mental handicap	12	97	109
Death of someone close to you (sudden)	21	124	145
Death of someone close to you (expected)	34	192	226
Saw domestic violence before age 16	9	42	51
Saw robbery, mugging or attack	5	26	31
Self robbed, mugged or physically attacked	9	38	47
Physical abuse before age 16	4	27	31
Physical abuse after age 16	3	32	35
Sexual harassment at work or school	2	39	41
Sexual abuse before age 16	3	18	21
Sexual abuse after age 16	0	16	16
Rape before age 16	2	7	9
Rape after age 16	0	13	13
Saw one of these events happen to another person	7	54	61

**Note*: Data collection error may have influenced the number of positive responses for items appearing after this item on the questionnaire

Table 13. Study 2 correlations between possible mediators and well-being

	Depression	Anxiety	Stress	SF-12 Physical	SF-12 Mental	PSOMS
Belief in God	-.11	.01	-.10	.06	.14	.05
Self-Ranked Religiousness	-.00	.08	-.01	-.05	.04	-.05
Self-Ranked Spirituality	-.04	.06	.05	-.06	.04	.04
Positive Attitudes Toward God	-.18	-.09	-.12	-.09	.17	.17
Negative Attitudes Toward God	.26**	.18	.27**	-.01	-.27*	-.23**
Optimism	-.38*	-.31**	-.39*	.12	.22	.37*

Note. *Correlation is significant at the $p<.05$ level (2-tailed). **Correlation is significant at the $p<.01$ level (2-tailed).

Table 14. Study 2 Correlations between VOSS subscales and Well-Being Measures at Time 1

	Depression	Anxiety	Stress	SF-12 Physical	SF-12 Mental	PSOMS
Unorthodox	**.21****	**.15***	**.24****	-.03	**-.13***	**-.20****
Random	.08	.00	.05	.06	-.01	-.02
Retribution	**.13***	**.13***	**.13***	-.07	-.11	-.06
Divine Response	-.04	-.01	-.02	-.07	.11	-.02
Limited Knowledge	**.13***	.04	.12	.05	-.09	-.07
Encounter	.03	-.01	.07	-.04	.01	-.06
Providence	.11	.07	.10	-.05	-.02	**-.14***
Overcoming	-.08	.01	-.04	-.00	.10	-.04
Suffering God	-.03	.04	.05	-.05	**.15***	.01
Soul Building	-.01	.04	.03	.01	.05	-.11

Note. *Correlation is significant at the $p<.05$ level (2-tailed). **Correlation is significant at the $p<.01$ level (2-tailed).

Figure 2. Study 2 Moderated Mediation Model with Religion as moderator

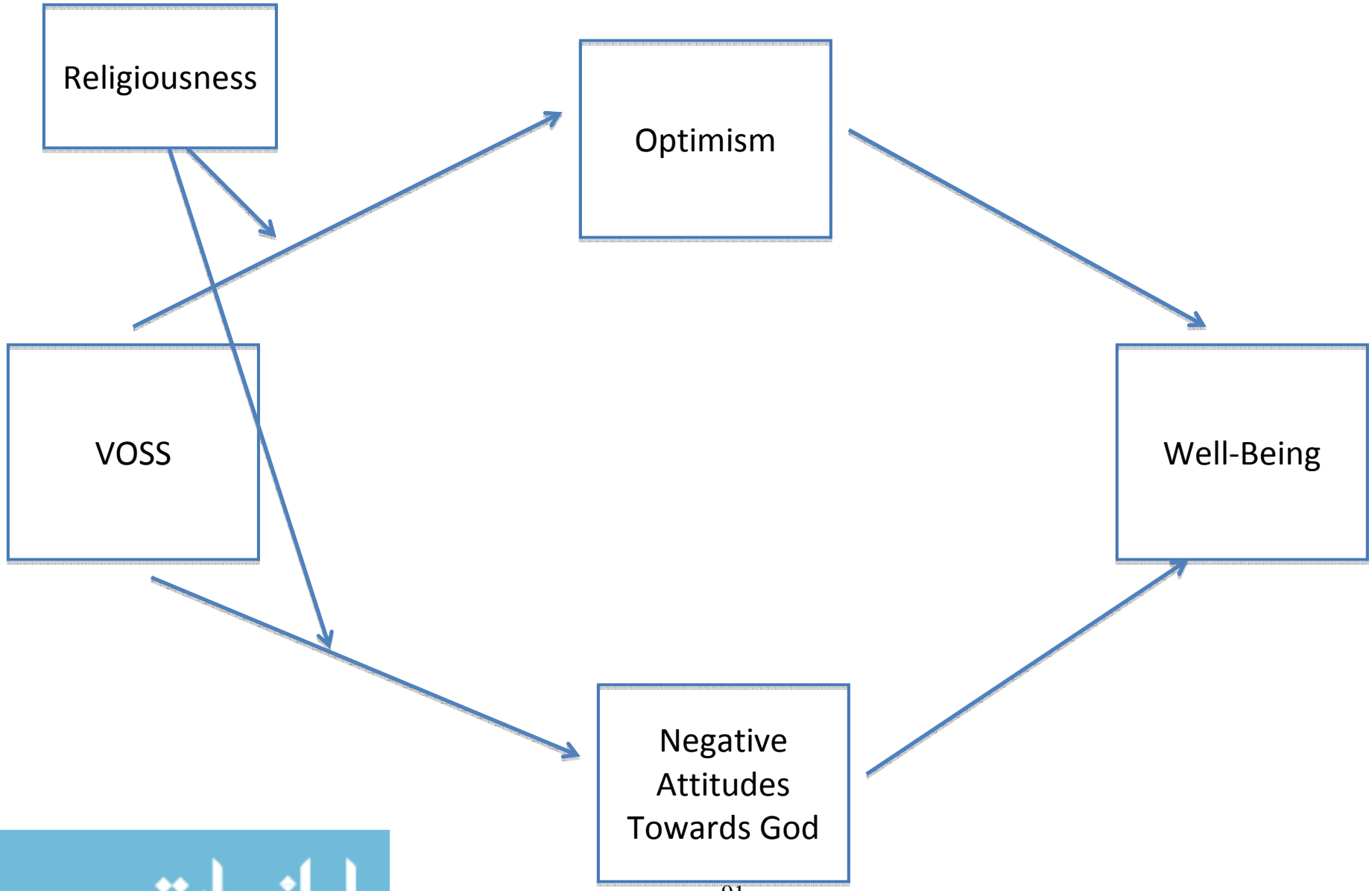

Table 15. Effects of Unorthodox Beliefs on Well-Being, Moderated by Religious Self-Ranking

Outcome	Type of Effect	Mediator	Moderator Level	b	Bootstrap S.E.	P-value	CI (L)	CI (H)
Depression	Indirect	Optimism	Low	0.62	0.24	0.01	0.23	1.18
Depression	Indirect	Optimism	Medium	0.53	0.17	0.00	0.27	0.93
Depression	Indirect	Optimism	High	0.43	0.19	0.02	0.10	0.86
Depression	Total		Low	1.03	0.34	0.00	0.47	1.86
Depression	Total		Medium	0.81	0.25	0.00	0.42	1.42
Depression	Total		High	0.59	0.27	0.03	0.13	1.17
Anxiety	Indirect	Optimism	Low	0.50	0.19	0.01	0.20	0.95
Anxiety	Indirect	Optimism	Medium	0.40	0.14	0.00	0.19	0.74
Anxiety	Indirect	Optimism	High	0.31	0.15	0.04	0.06	0.68
Anxiety	Total		Low	0.82	0.29	0.00	0.36	1.53
Anxiety	Total		Medium	0.62	0.21	0.00	0.30	1.18
Stress	Indirect	Optimism	Low	0.76	0.27	0.01	0.32	1.41
Stress	Indirect	Optimism	Medium	0.64	0.19	0.00	0.32	1.11
Stress	Indirect	Optimism	High	0.52	0.22	0.02	0.13	1.00
Stress	Total		Low	1.29	0.39	0.00	0.62	2.15
Stress	Total		Medium	1.01	0.30	0.00	0.51	1.67
Stress	Total		High	0.73	0.32	0.03	0.15	1.41
MCS12	Indirect	ATGS	Low	-0.63	0.30	0.04	-1.40	-0.16
MCS12	Indirect	ATGS	Medium	-0.48	0.19	0.01	-1.01	-0.21
MCS12	Total		Low	-1.01	0.36	0.01	-1.82	-0.39
MCS12	Total		Medium	-0.78	0.25	0.00	-1.39	-0.38
PSOMS	Indirect	Optimism	Low	-0.06	0.02	0.01	-0.11	-0.02
PSOMS	Indirect	Optimism	Medium	-0.05	0.01	0.00	-0.09	-0.03
PSOMS	Indirect	Optimism	High	-0.04	0.02	0.01	-0.07	-0.01
PSOMS	Total		Low	-0.10	0.03	0.00	-0.17	-0.05
PSOMS	Total		Medium	-0.08	0.02	0.00	-0.13	-0.04
PSOMS	Total		High	-0.06	0.02	0.02	-0.11	-0.02

Notes: S.E. = Standard errors; CI (L) = Bias-corrected confidence interval (Low); CI (H) = Bias-corrected confidence interval (High); MCS12=Mental Health; PCS12 = Physical Health; ATGS= Negative Attitudes Towards God; PSOMS= Positive States of Mind Scale.

Table 16. Effects of Beliefs on Well-Being, Moderated by Religious Self-Ranking

Belief	Outcome	Type of Effect	Mediator	Level	b	Bootstrap S.E.	P-value	CI (L)	CI (H)
Retribution	PSOMS	Total		Medium	-0.03	0.01	0.03	-0.06	-0.01
Divine Responsibility	PCS12	Direct			-3.27	1.42	0.02	-6.05	-0.48
Divine Responsibility	PCS12	Interaction			0.98	0.45	0.03	0.10	1.86
Divine Responsibility	MCS12	Direct			2.69	1.18	0.02	0.38	5.01
Limited Knowledge	Depression	Total		Medium	0.40	0.17	0.02	0.12	0.78
Limited Knowledge	Stress	Total		Medium	0.50	0.20	0.01	0.16	0.97
Limited Knowledge	PCS12	Direct			1.23	0.57	0.03	0.12	2.34
Providence	Depression	Total		Medium	0.31	0.14	0.03	0.07	0.66
Providence	Stress	Total		Medium	0.41	0.17	0.02	0.12	0.79
Providence	MCS12	Total		Medium	-0.34	0.14	0.01	-0.66	-0.12
Providence	PSOMS	Total		Medium	-0.03	0.01	0.03	-0.06	-0.01
Overcoming	MCS12	Direct			2.53	1.24	0.04	0.09	4.97
Suffering God	Stress	Indirect	Optimism	High	-0.46	0.19	0.02	-0.91	-0.14
Suffering God	Stress	Total		High	-0.52	0.22	0.02	-1.02	-0.13
Suffering God	MCS12	Direct			2.92	1.08	0.01	0.80	5.05
Suffering God	PSOMS	Indirect	Optimism	High	0.03	0.01	0.02	0.01	0.06
Suffering God	PSOMS	Total			0.04	0.01	0.01	0.01	0.07

Notes: S.E. = Standard errors; CI (L) = Bias-corrected confidence interval (Low); CI (H) = Bias-corrected confidence interval (High); MCS12=Mental Health; PCS12 = Physical Health; ATGS= Negative Attitudes Towards God; PSOMS= Positive States of Mind Scale.

Figure 3. Divine Responsibility & Religious Self-Ranking Predict Physical Health

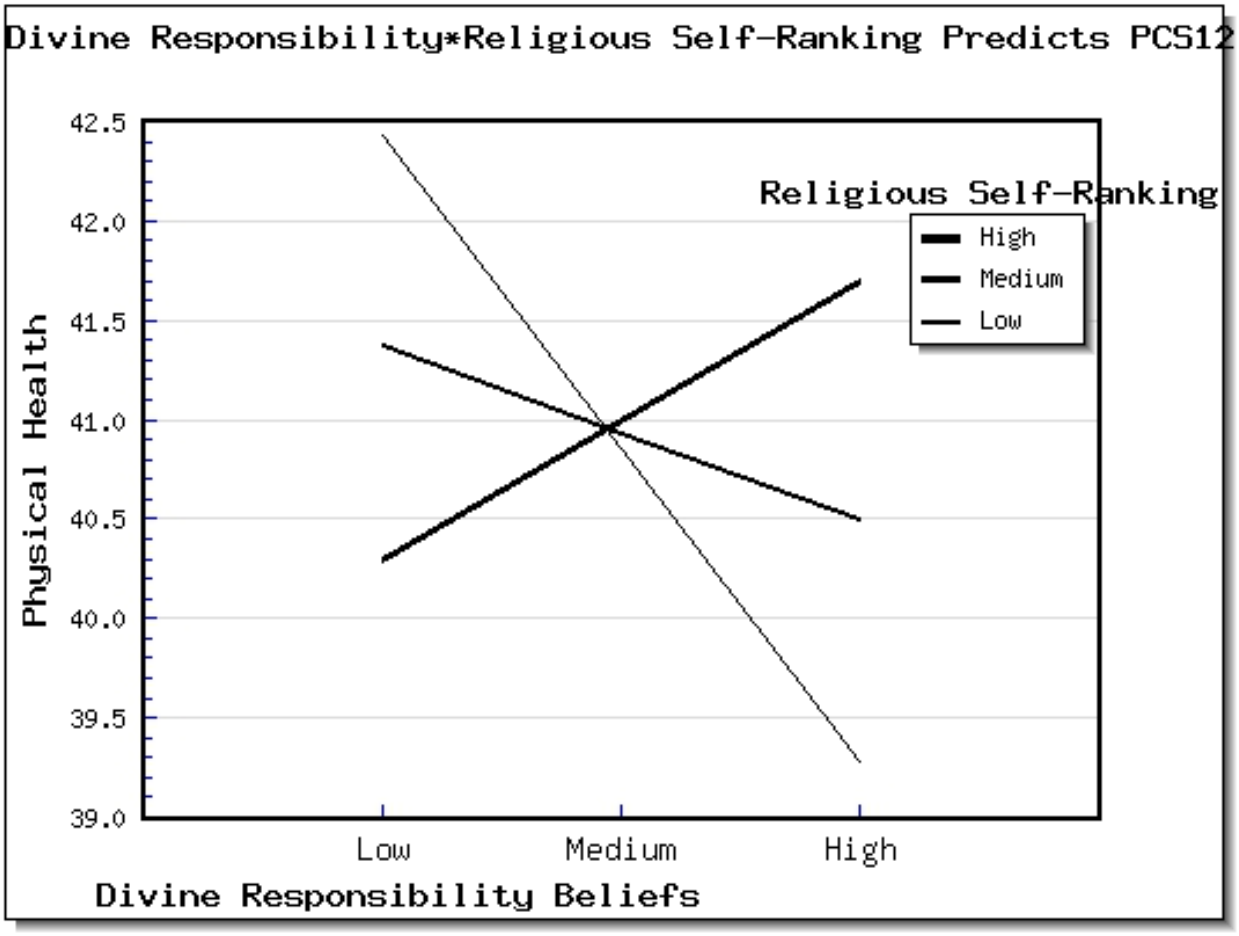

Figure 4. Limited Knowledge & Religious Self-Ranking Predict Physical Health

Figure 5. Sample Cross-Lag Model

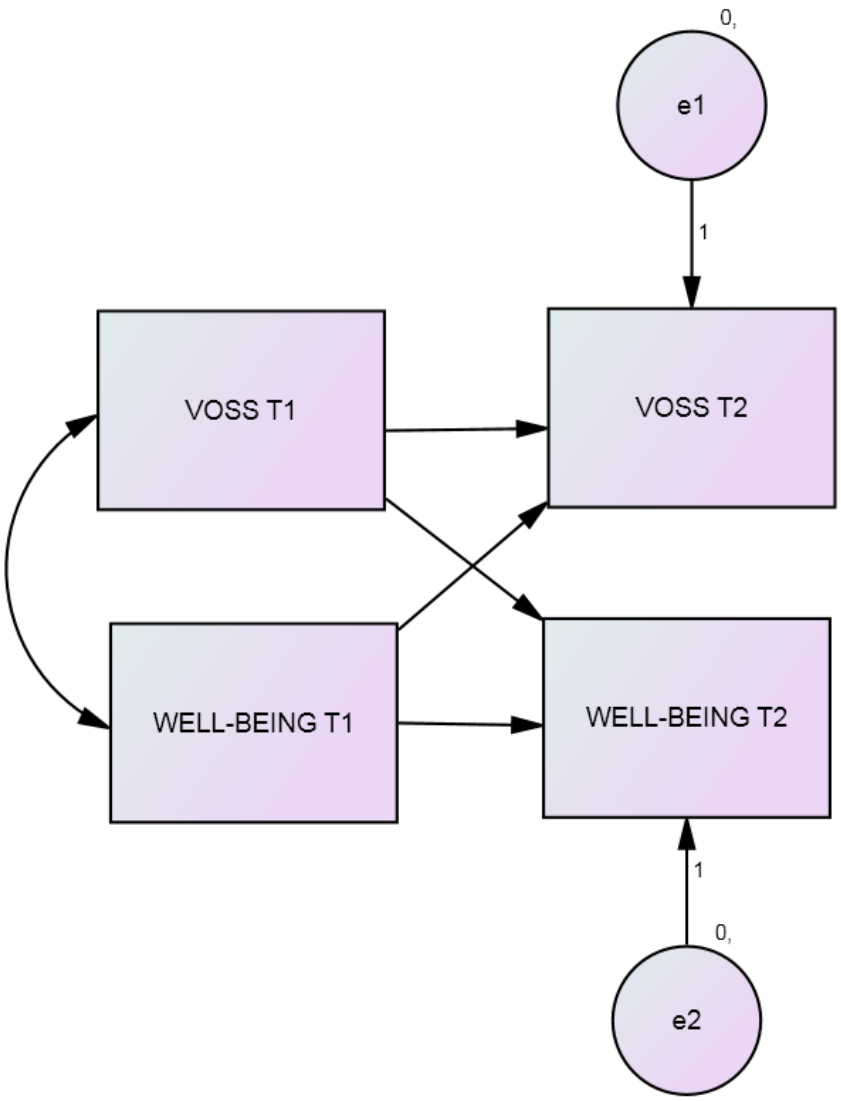

Figure 6. Study 2 Moderated Mediation Model

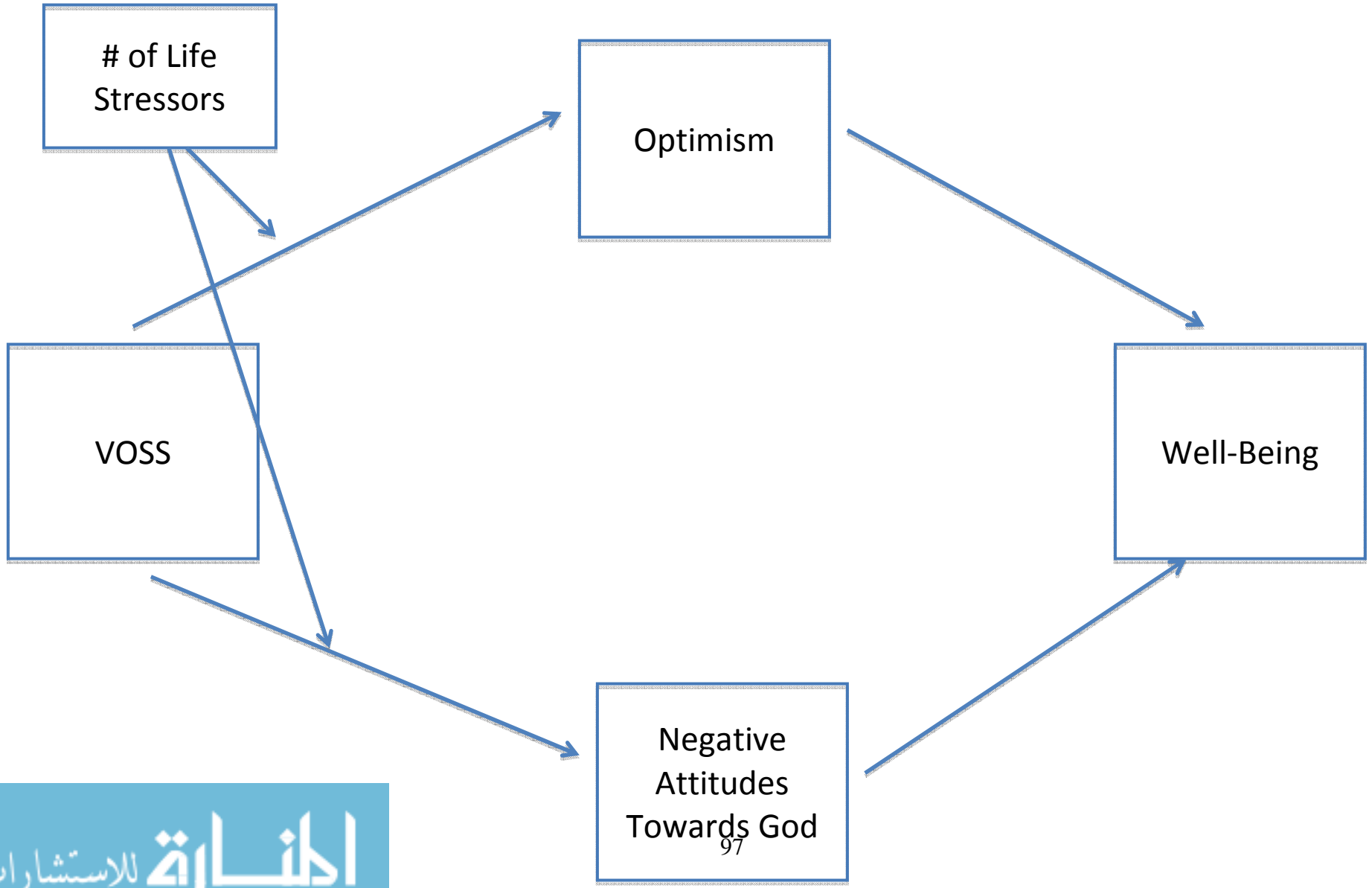

Table 17. Unorthodox Effects on Well-Being, Moderated by Total # of Life Stressors

Outcome	Type of Effect	Mediator	Moderator Level	b	Bootstrap S.E.	P-value	CI (L)	CI (H)
Depression	Indirect	Optimism	Low	0.55	0.21	0.01	0.21	1.05
Depression	Indirect	Optimism	Medium	0.50	0.16	0.00	0.88	0.24
Depression	Indirect	Optimism	High	0.44	0.19	0.02	0.12	0.90
Depression	Total		Low	0.82	0.28	0.00	0.35	1.47
Depression	Total		Medium	0.77	0.23	0.00	0.39	1.32
Depression	Total		High	0.72	0.31	0.02	0.21	1.50
Anxiety	Indirect	Optimism	Low	0.49	0.18	0.01	0.20	0.95
Anxiety	Indirect	Optimism	Medium	0.42	0.14	0.00	0.21	0.78
Anxiety	Indirect	Optimism	High	0.36	0.17	0.03	0.09	0.76
Anxiety	Total		Low	0.64	0.25	0.01	0.25	1.25
Anxiety	Total		Medium	0.57	0.20	0.00	0.25	1.04
Anxiety	Total		High	0.50	0.24	0.04	0.14	1.13
Stress	Indirect	Optimism	Low	0.73	0.28	0.01	0.29	1.40
Stress	Indirect	Optimism	Medium	0.64	0.20	0.00	0.31	1.13
Stress	Indirect	Optimism	High	0.56	0.22	0.01	0.17	1.06
Stress	Total		Low	1.09	0.39	0.01	0.45	1.99
Stress	Total		Medium	1.00	0.31	0.00	0.46	1.67
Stress	Total		High	0.91	0.38	0.02	0.28	1.81
PCS12	Indirect	Optimism	Medium	-0.41	0.20	0.04	-0.94	-0.10
MCS12	Indirect	ATGS	Low	-0.47	0.23	0.04	-1.06	-0.12
MCS12	Indirect	ATGS	Medium	-0.49	0.21	0.02	-1.07	-0.18
MCS12	Total		Low	-0.87	0.31	0.01	-1.61	-0.36
MCS12	Total		Medium	-0.83	0.27	0.00	-1.51	-0.41
PSOMS	Direct			-0.16	0.06	0.01	-0.28	-0.04
PSOMS	Indirect	Optimism	Low	-0.06	0.02	0.00	-0.10	-0.03
PSOMS	Indirect	Optimism	Medium	-0.05	0.01	0.00	-0.09	-0.03
PSOMS	Indirect	Optimism	High	-0.04	0.02	0.02	-0.08	-0.01
PSOMS	Total		Low	-0.08	0.03	0.00	-0.15	-0.04
PSOMS	Total		Medium	-0.07	0.02	0.00	-0.13	-0.04
PSOMS	Total		High	-0.06	0.03	0.03	-0.14	-0.02

Notes: S.E. = Standard errors; CI (L) = Bias-corrected confidence interval (Low); CI (H) = Bias-corrected confidence interval (High); MCS12=Mental Health; PCS12 = Physical Health; ATGS= Negative Attitudes Towards God; PSOMS= Positive States of Mind Scale.

Table 18. Effects of Beliefs on Well-Being, Moderated by Total # of Life Stressors

Belief	Outcome	Type of Effect	Mediator	Level	b	Bootstrap S.E.	P-value	CI (L)	CI (H)
Retribution	Depression	Indirect	Optimism	Low	0.37	0.15	0.02	0.11	0.74
Retribution	Depression	Total		Low	0.60	0.20	0.00	0.26	1.07
Retribution	Anxiety	Indirect	Optimism	Low	0.28	0.13	0.03	0.08	0.61
Retribution	Anxiety	Indirect	Optimism	Medium	0.19	0.09	0.04	0.05	0.42
Retribution	Anxiety	Total		Low	0.37	0.16	0.02	0.10	0.74
Retribution	Anxiety	Total		Medium	0.24	0.12	0.04	0.06	0.52
Retribution	Stress	Indirect	Optimism	Low	0.37	0.18	0.04	0.06	0.78
Retribution	Stress	Indirect	Optimism	Medium	0.25	0.12	0.04	0.05	0.53
Retribution	Stress	Total		Low	0.56	0.23	0.02	0.14	1.06
Retribution	Stress	Total		Medium	0.37	0.17	0.03	0.09	0.74
Retribution	MCS12	Total		Low	-0.42	0.19	0.03	-0.84	-0.10
Retribution	PSOMS	Indirect	Optimism	Low	-0.03	0.01	0.02	-0.06	-0.01
Retribution	PSOMS	Indirect	Optimism	Medium	-0.02	0.01	0.04	-0.04	0.00
Retribution	PSOMS	Total		Low	-0.04	0.02	0.01	-0.08	-0.02
Retribution	PSOMS	Total		Medium	-0.03	0.01	0.02	-0.06	-0.01
Divine Responsibility	Depression	Indirect	Optimism	High	-0.37	0.19	0.05	-0.83	-0.08
Divine Responsibility	Depression	Total		High	-0.56	0.26	0.03	-1.16	-0.13
Divine Responsibility	Anxiety	Total		High	-0.39	0.18	0.03	-0.80	-0.08
Limited Knowledge	Depression	Total		Low	0.47	0.22	0.03	0.10	0.96
Limited Knowledge	Depression	Total		Medium	0.36	0.17	0.03	0.08	0.72
Limited Knowledge	Stress	Indirect		Low	0.31	0.15	0.04	0.10	0.72
Limited Knowledge	Stress	Total		Medium	0.45	0.20	0.03	0.10	0.90
Encounter	PCS12	Direct			-1.98	0.90	0.03	-3.74	-0.22
Providence	Depression	Total		Low	0.44	0.19	0.02	0.12	0.87
Providence	Stress	Total		Low	0.46	0.23	0.04	0.05	0.92
Providence	MCS12	Indirect	ATGS	Low	-0.26	0.13	0.04	-0.57	-0.07
Providence	MCS12	Total	ATGS	Low	-0.46	0.18	0.01	-0.87	-0.15
Suffering God	Stress	Indirect	Optimism	Medium	-0.27	0.13	0.04	-0.55	-0.05
Suffering God	PSOMS	Indirect	Optimism	Medium	0.02	0.01	0.04	0.00	0.04
Soul-Building	PSOMS	Direct			-0.14	0.04	0.00	-0.22	-0.05
Soul-Building	PSOMS	Interaction			0.02	0.01	0.01	0.00	0.03

Notes: S.E. = Standard errors; CI (L) = Bias-corrected confidence interval (Low); CI (H) = Bias-corrected confidence interval (High); MCS12=Mental Health; PCS12 = Physical Health; ATGS= Negative Attitudes Towards God; PSOMS= Positive States of Mind Scale.

Figure 7. Soul-Building Beliefs & Total Life Stressors Predict Positive States of Mind

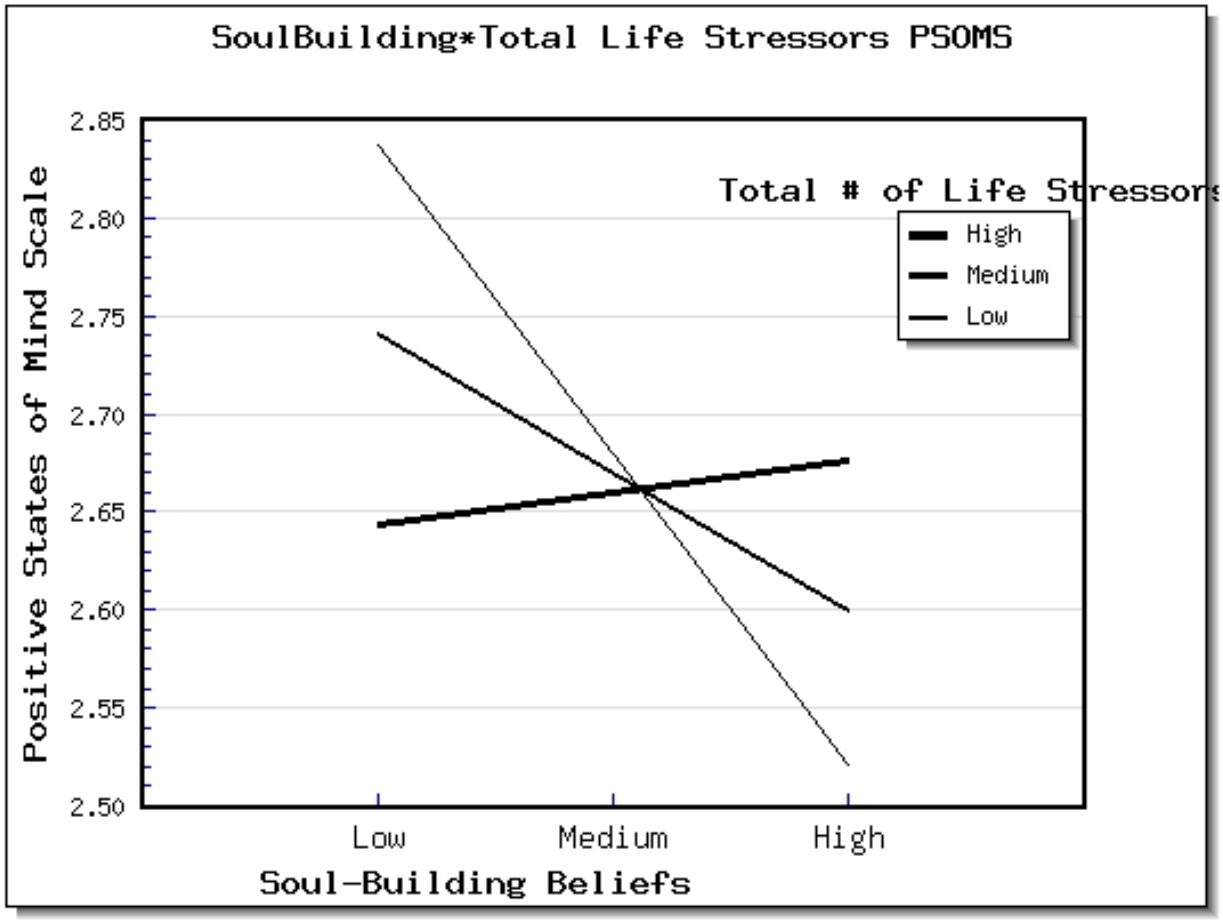

Table 19. Unorthodox Effects on Well-Being, Moderated by Interpersonal Life Stressors

Outcome	Type of Effect	Mediator	Moderator Level	b	Bootstrap S.E.	P-value	CI (L)	CI (H)
Depression	Indirect	Optimism	Medium	0.50	0.15	0.00	0.25	0.86
Depression	Indirect	Optimism	High	0.65	0.18	0.00	0.34	1.06
Depression	Total		Medium	0.78	0.22	0.00	0.42	1.32
Depression	Total		High	1.07	0.33	0.00	0.54	1.91
Anxiety	Indirect	Optimism	Medium	0.43	0.13	0.00	0.22	0.77
Anxiety	Indirect	Optimism	High	0.52	0.17	0.00	0.25	0.94
Anxiety	Total		Medium	0.60	0.20	0.00	0.27	1.09
Anxiety	Total		High	0.78	0.29	0.01	0.33	1.53
Stress	Direct			0.97	0.47	0.04	0.05	1.90
Stress	Indirect	Optimism	Medium	0.64	0.19	0.00	0.33	1.10
Stress	Indirect	Optimism	High	0.76	0.22	0.00	0.39	1.28
Stress	Total		Medium	1.02	0.30	0.00	0.52	1.69
Stress	Total		High	1.34	0.43	0.00	0.59	2.33
MCS12	Indirect	ATGS	Medium	-0.46	0.19	0.01	-0.97	-0.19
MCS12	Indirect	ATGS	High	-0.79	0.34	0.02	-1.64	-0.24
MCS12	Total		Medium	-0.79	0.25	0.00	-1.41	-0.41
MCS12	Total		High	-1.18	0.41	0.01	-2.13	-0.47
PSOMS	Indirect	Optimism	Low	-0.04	0.02	0.04	-0.09	-0.01
PSOMS	Indirect	Optimism	Medium	-0.05	0.01	0.00	-0.09	-0.03
PSOMS	Indirect	Optimism	High	-0.06	0.02	0.00	-0.11	-0.03
PSOMS	Total		Low	-0.05	0.02	0.02	-0.11	-0.02
PSOMS	Total		Medium	-0.08	0.02	0.00	-0.13	-0.04
PSOMS	Total		High	-0.10	0.03	0.00	-0.18	-0.04

Notes: S.E. = Standard errors; CI (L) = Bias-corrected confidence interval (Low); CI (H) = Bias-corrected confidence interval (High); MCS12=Mental Health; PCS12 = Physical Health; ATGS= Negative Attitudes Towards God; PSOMS= Positive States of Mind Scale.

Table 20. Effects of Beliefs on Well-Being, Moderated by Interpersonal Life Stressors

Belief	Outcome	Type of Effect	Mediator	Level	b	Bootstrap S.E.	P-value	CI (L)	CI (H)
Retribution	Anxiety	Total		Medium	0.24	0.12	0.04	0.05	0.51
Retribution	Stress	Total		Medium	0.36	0.17	0.03	0.06	0.72
Retribution	MCS12	Interaction			-0.65	0.23	0.00	-1.10	-0.21
Retribution	PSOMS	Indirect	Optimism	Medium	-0.02	0.01	0.04	-0.04	0.00
Retribution	PSOMS	Total		Medium	-0.03	0.01	0.03	-0.05	-0.01
Divine Responsibility	Depression	Indirect	Optimism	High	-0.40	0.18	0.03	-0.84	-0.11
Divine Responsibility	Depression	Total		High	-0.59	0.26	0.03	-1.18	-0.13
Limited Knowledge	Depression	Total		Medium	0.38	0.18	0.03	0.09	0.76
Limited Knowledge	Stress	Total		Medium	0.48	0.21	0.03	0.12	0.96
Encounter	Stress	Direct			0.89	0.40	0.03	0.10	1.68
Encounter	MCS12	Interaction			0.53	0.24	0.03	0.05	1.01
Encounter	PSOMS	Direct			-0.09	0.03	0.01	-0.15	-0.02
Providence	Depression	Indirect	Optimism	Low	0.27	0.13	0.04	0.06	0.59
Providence	Depression	Total		Low	0.47	0.19	0.01	0.18	0.92
Providence	Stress	Total		Low	0.50	0.21	0.02	0.12	0.95
Providence	MCS12	Indirect	ATGS	Low	-0.29	0.13	0.03	-0.62	-0.08
Providence	MCS12	Total		Low	-0.50	0.18	0.01	-0.93	-0.19
Providence	MCS12	Total		Medium	-0.28	0.13	0.03	-0.60	-0.06
Providence	PSOMS	Total		Low	-0.04	0.02	0.03	-0.07	-0.01
Suffering God	Stress	Indirect	Optimism	Medium	-0.27	0.12	0.03	-0.55	-0.06
Soul-Building	PSOMS	Direct			-0.07	0.03	0.01	-0.13	-0.02

Notes: S.E. = Standard errors; CI (L) = Bias-corrected confidence interval (Low); CI (H) = Bias-corrected confidence interval (High); MCS12=Mental Health; PCS12 = Physical Health; ATGS= Negative Attitudes Towards God; PSOMS= Positive States of Mind Scale.

Figure 8. Retribution & Interpersonal Stressors Predict Mental Health

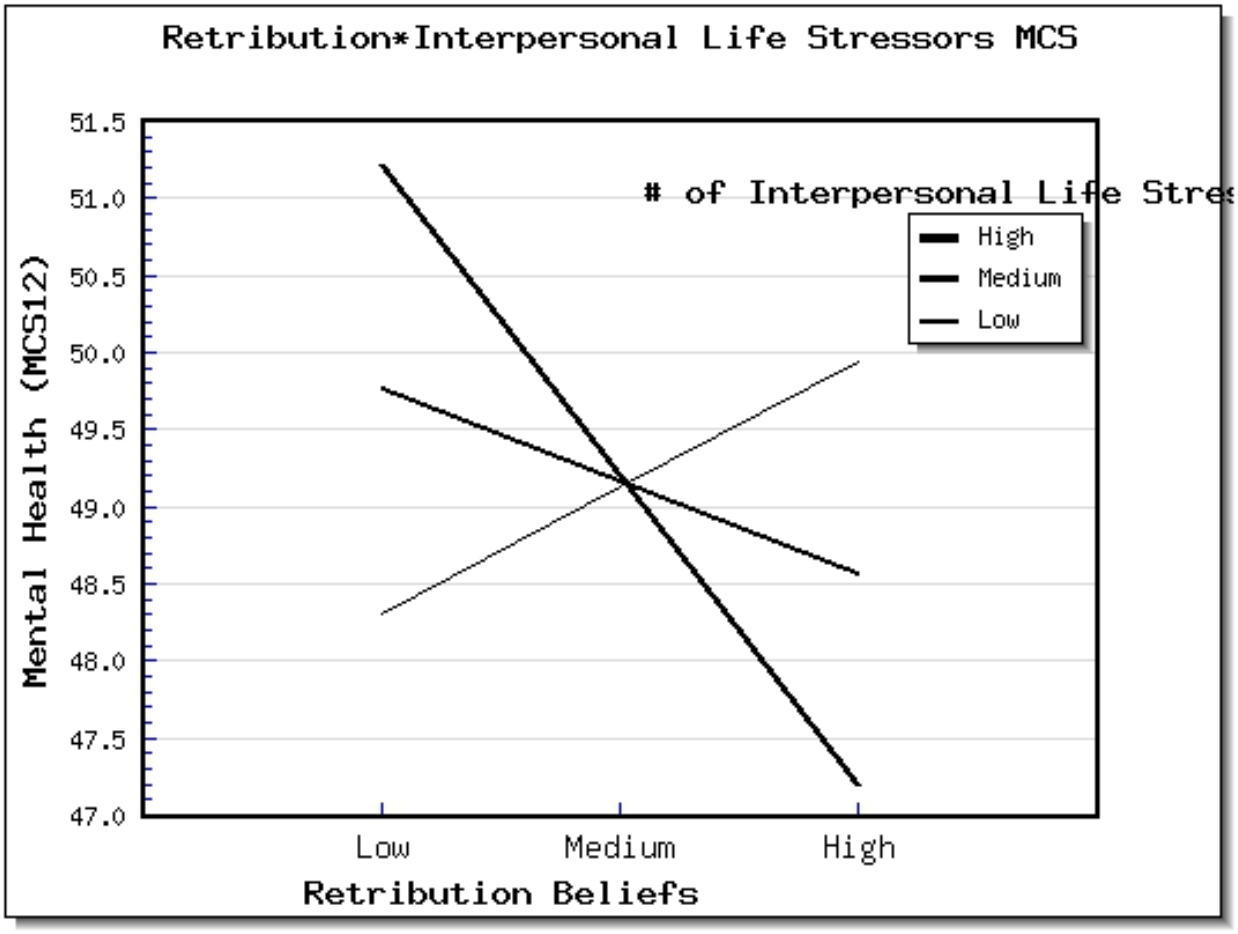

Figure 9. Encounter & Interpersonal Stressors Predict Mental Health

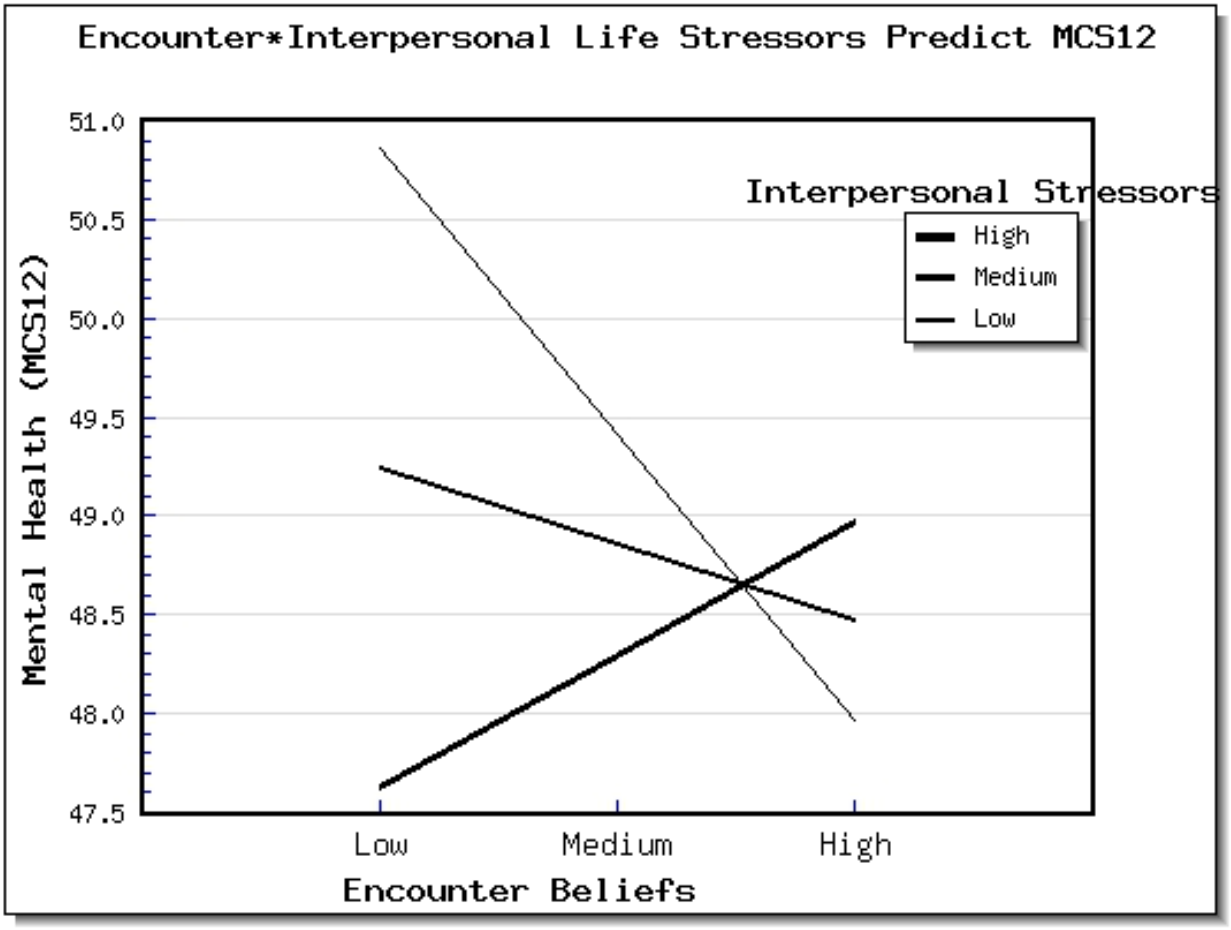

Table 21. Time 2 Reports of stressful events

Timing of Stressful Event	% (N)
Within the last month	31% (N=60)
Within the last three months	29% (N=55)
Within the last year and continued	14% (N=26)
More than 1 but less than 3 years	8% (N=16)
More than 3 years	6% (N=11)
More than 5 years	12% (N=23)
How stressful was it when it first occurred?	
Not at all	4% (N=7)
A little bit	15% (N=30)
Moderately	24% (N=48)
Quite a bit	31% (N=60%)
Extremely	26% (N=51)
How stressful is it for you now?	
Not at all	20% (N=39)
A little bit	21% (N=41)
Moderately	25% (N=50)
Quite a bit	23% (N=45)
Extremely	11% (N=21)

Figure 10. Retribution & Current Appraisal Predicts Stress

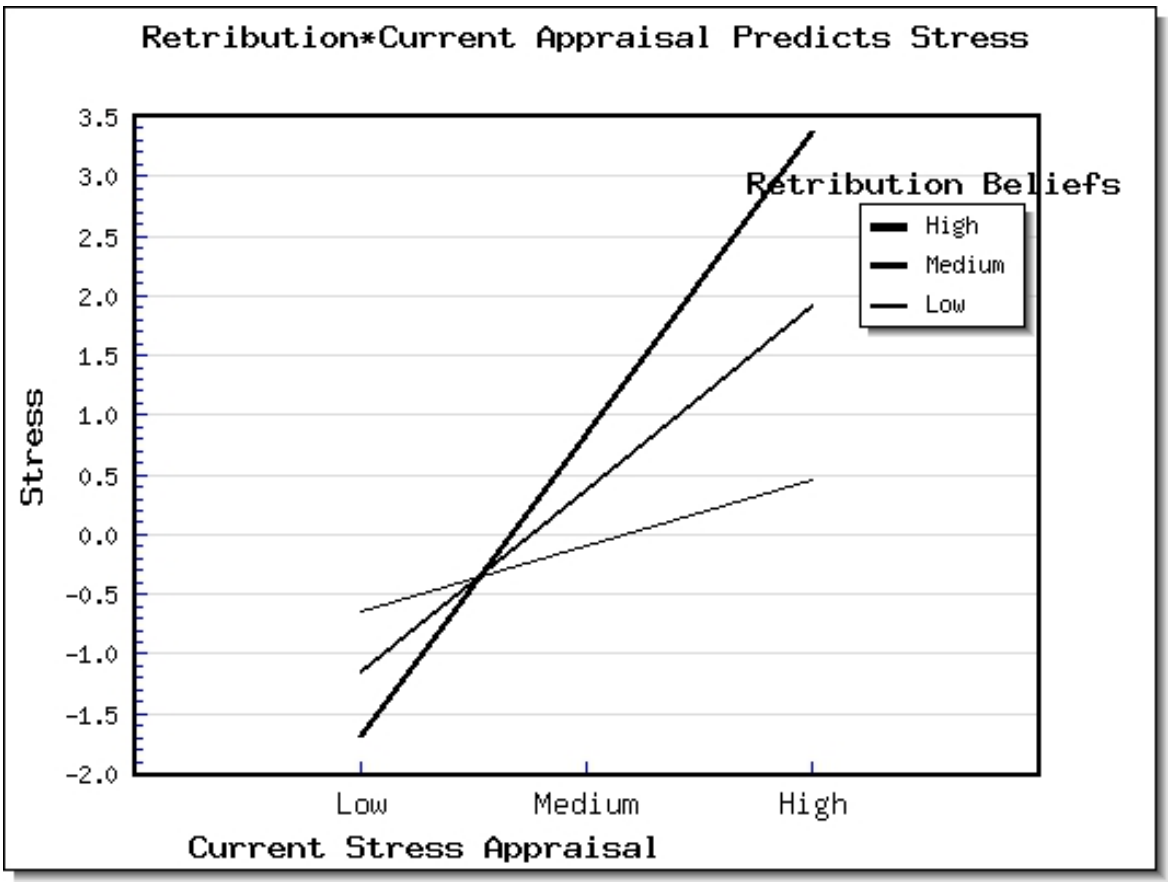

Figure 11. Unorthodox & Current Appraisal Predicts PSOMS

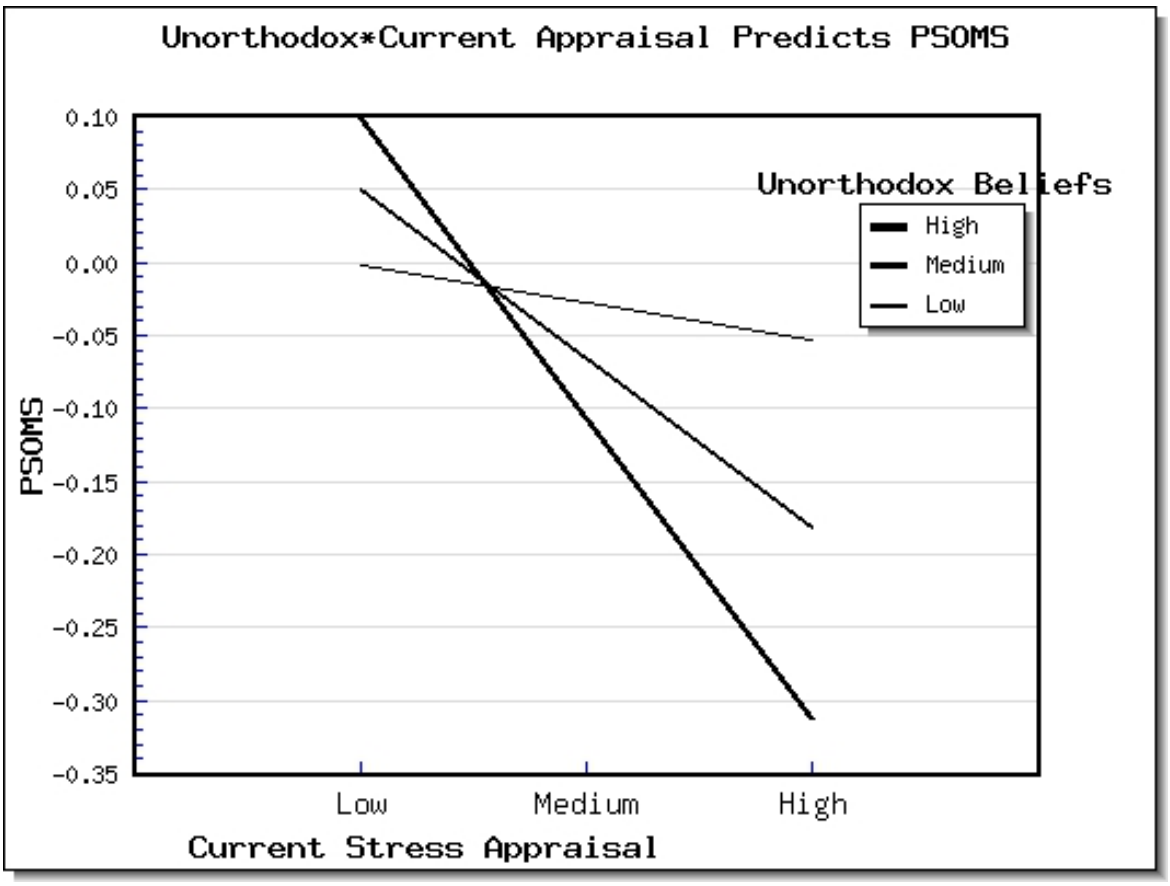

Figure 12. Encounter & Current Appraisal Predicts PSOMS